DL-0810

Service Manual

English, 8 January 2007

Main technical specification

Print resolution (maximum)	525 dpi
Maximum print size	152 x 228mm
Capacity	500 prints/hour (152x102mm)
Processing time	2' 25"
Light source	LED Matrix
Imaging unit	LCD
Lens	High quality fix focus lens
Network Protocol	TCP/IP
Color management	Color under control system built in Linux PC (base on profiles)
Process	CD: 30 second BF: 30 second
Working tank volume	CD: 7L BF: 7L STB: 4L
Replenishing tank volume	CD: 10L BF: 10L STB: 10L
Paper width	89, 127, 152mm
Supported file format	Bmp, jpeg, tiff
Power supply	AC 210-230V, 50-60HZ
Rating current	11A
Power	2.5KW
Weight	200kg (without chemistry)
Dimension	1400mm×500mm×1275mm (Length x Width x Height)

Explanation of manual

About the chapters

- 1. Cautions for work

  Contain information on how to achieve safety in service operations.

  Be sure to read precautions thoroughly and carefully.

- 2. Maintenance

  Contain items concerning maintenance necessary to make high quality prints.

- 3. Service

  Contain information for service personnel.

- 4. Electrical parts and wiring diagram

  Describe the sensors and PCB's used in this machine and the wiring diagram.

- 5. Trouble shooting

  Describe how to solve the troubles.

Symbols used in this manual

Definitions of the symbols used in this manual are as follow:

	Warning symbol. Text following this symbol contains particularly Information concerning safety. Pay extra attention to this information.
	Important symbol. Indicates operation or procedures requiring caution, instructions which should be followed, supplementary explanations, etc.
	Reference symbol. Indicates the manual or section which should be referred to.
	Help symbol. Indicates functions or instructions which are convenient to know.

Abbreviations for processing solutions

The names of the processing solution in this manual are indicated as below. Some of types of processing solutions may have other names.

Processing solutions	Abbreviations
Color developer	CD
Bleach Fixer	BF
Stabilizer	STB

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Chapter 1 Caution for work

This chapter contains information on how to achieve safety in service operations.

Be sure to read precautions thoroughly and carefully.

1.1 For safe operation

- **General precautions**

 Prior to any part replacement or mechanical adjustment, be sure the air brake is switched off.

  - Ground wires (green and yellow) are connected to the covers and units of the machine. For reassembly, be sure to connect the ground wires as they were.
  - Be sure to perform an operation check after replacing or adjusting any parts (or units).

- **Precaution against electric shock**

  - If any case you have to take care of wiring for the power such as moving the machine, ask a qualified professional electrician to do so. Do not forget to ground the machine.
  - Pay attention to avoid shocks when performing troubleshooting, wiring checking, or voltage/current measurement.
  - When replacing a fuse or PCB, be sure to switch off the air brake.

- **Precaution for operating rotary section**

  - Be careful with your hands, hair, clothes, etc., not to be caught under the gear, chain, belt, roller, fan and other rotating parts.
  - Do not remove the cover unless it is specified.
  - If your hand or the like is caught and you can not move, ask someone around you to turn off the air brake at once.

1.2 Countermeasure for static electricity when replacing and maintaining the electrical parts

If an electronically charged human body touches electronic parts like PCBs, it may adversely affect the electronic parts.

When handling the electronic parts, be sure to use static-dissipative conductive gloves to prevent the components on the PCB from being damaged due to static electricity.

The static-dissipative conductive gloves are included in the spare parts of your machine.

 When using the static-dissipative conductive gloves, be sure to turn off the air brake and wait 15 seconds to carry out operation.

1.3 Handling chemicals

The work with the machine involves the handling of slightly poisonous, irritating and etching substances, to apart from these, the user must ensure sufficient aeration. The air in industrial workrooms should be exchanged at least 8 to 10 times per hour.

All photographic developers contain substances which may irritate the skin, the mucous membrane and the eyes and which may cause allergic skin reactions affecting very sensitive persons. For this reason, avoid long or repeated skin contact, especially with developer solutions.

For all jobs where photographic processing solutions may splash, e.g. preparing and filling in chemical solutions, cleaning processing racks etc.:

- Wear protective gloves; rinse all solutions that get on the skin with plenty of running water.
- Wear industrial glasses.
- Wash with soap and rinse with lots of water after completion of work.

Store chemicals and processing solutions in a safe place.

If a processing solution has been ingested accidentally, immediately rinse mouth with water, and drink 2 or more cups of water and induce vomiting. Contact a physician as soon as possible, and follow physician’s instructions.

If processing solution gets into eyes, immediately rinse them under running water for at least 15 minutes, and then contact a physician.

Processing solution stains on your clothing may result in discoloration or fading, when handling processing solutions, wear clothing for work wear.

Photochemical are not allowed to be drained off into the public sewage system! Please

obtain the information about the regulations in force about the handling and correct disposal of chemistry from the country's authorities in charge.

1.4 Storage

The chemicals should be stored and prepared according to the manufacture's information and advice.

All Color papers must always be stored in a cool and dry place.

The best storage temperature is between 2℃ and 10℃.

Opened packages have to be stored at a relative humidity of 20-60%.

Storage at 20℃ over several days is possible without problems.

Storage temperatures above 30℃ should be avoided because they will cause visible alterations after only a few days.

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Chapter 2 Maintenance

This chapter contains items concerning maintenance necessary to make high quality prints.

Prologue

For a steady-going machine and making high quality prints, maintenance is very important.

Maintenance needs to be performed regularly. Otherwise unexpected problems could arise and the lifespan of the machine could be shortened.

- **Daily maintenance**
  - Start-up the machine in a sequence.
  - Spray some fresh water on the upper rollers of the processing racks and the cross-overs.
  - Morning test for all the paper magazines
- **Weekly maintenance:**
  - ABCD calibration if necessary.
  - Change the STB water.
  - Clean the filters of the working tanks.
  - Clean the cross-overs.
- **3 Month maintenance:**
  - Uniformity calibration if necessary
  - Twister 4 calibration if necessary
  - Clean the tanks if necessary.
  - Check the replenishing pumps, circulation pumps and the pipes to avoid potential chemical leakage.

Machine start-up sequence:

1. Turn on the Linux PC.
2. Turn on the Windows PC
3. Wait until the Linux PC startup finish.
4. Turn on the Drive power.

 Improper start-up of the machine could cause unexpected problems of the photos.


Windows PC Start button


Drive button

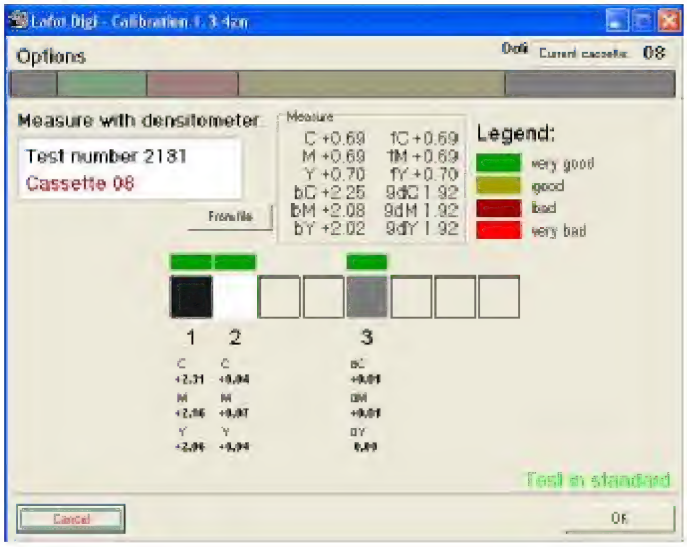
2.1 Morning setup

Purpose: To compensate the color deviation caused by changes of chemicals, etc., keep color output stabilized.

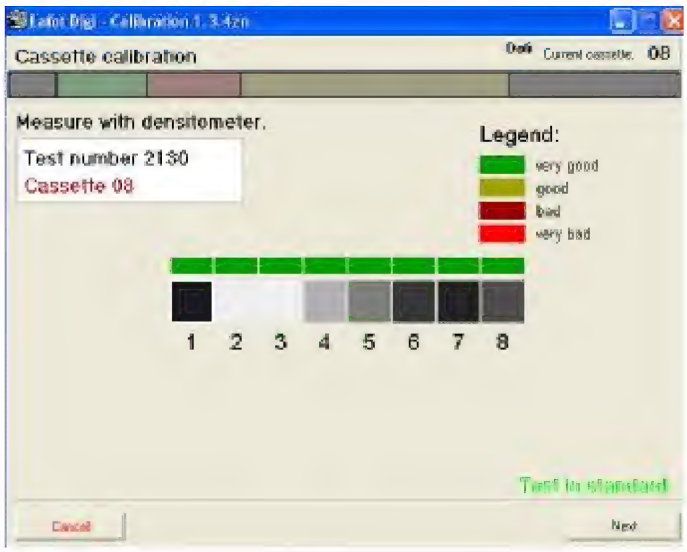
Precondition: Processing solution temperature has reached the set value.

Steps:

- Run **Maintenance**.
- Complete the **Calibration** > **Calibration**.



- Complete the **Calibration** > **Paper characteristics**.



This setup shall be performed for each cassette.

Calibration offers normal color control.

Paper characteristics offer professional color control.

If you perform the **Paper characteristics** without completing the **Calibration**, you may need to spend more time on this calibration.

During the calibration, press Ctrl key on the keyboard and while click **Cancel**, you can leave the calibration interface without wasting a new print.

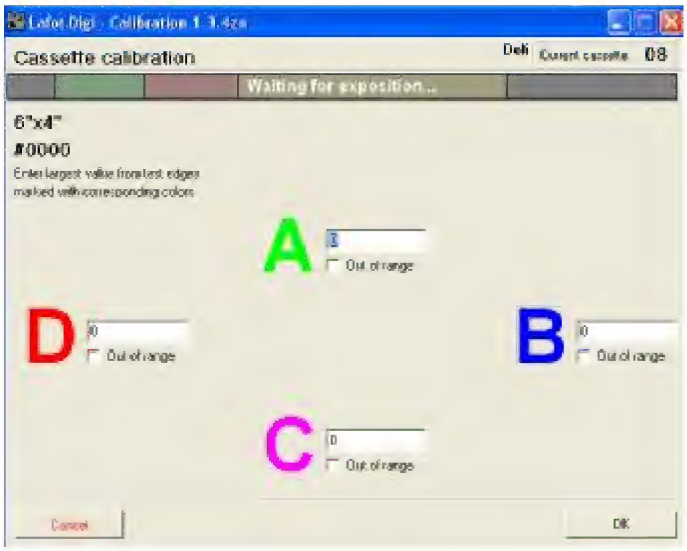
Press Ctrl key on the keyboard while entering the **Calibration** or **Paper characteristics** to continue the calibration.

2.2 Exposure center (ABCD) calibration

Purpose: To calibrate the image exposure center of the photo. In the case white border appears on the photo, this calibration shall be performed for the corresponding formats of the photos.

Steps:

- Open **Maintenance**.
- Select **cassette offset**, and then clicks **Next**.
- Select formats and then click **Next**, then computer will send test prints for the formats you selected.
- After the test prints coming out, key in the **A**, **B**, **C**, **D** value of the test prints to the corresponding format's dialog box.



- Click **Next**, then computer will send new test prints for these formats, repeat the above step, until the deviation of **A** and **C**, **B** and **D** value is within 4.

This calibration shall be done for each format and each cassette.

For example, if you have 2 cassettes with 152mm paper loaded which are cassette 01 and cassette 02, you will need to do this calibration for the 152x102mm and 152x203mm formats etc for both cassettes.

2.3 Double exposure center calibration

DL-0810 performs double exposure for 152x102mm and 127x89mm formats automatically. For a better understanding of double exposure, you can send 2 copies of 152x102mm format (152mm paper width) in **Istudio** and then open the printer door to watch the exposure procedure.

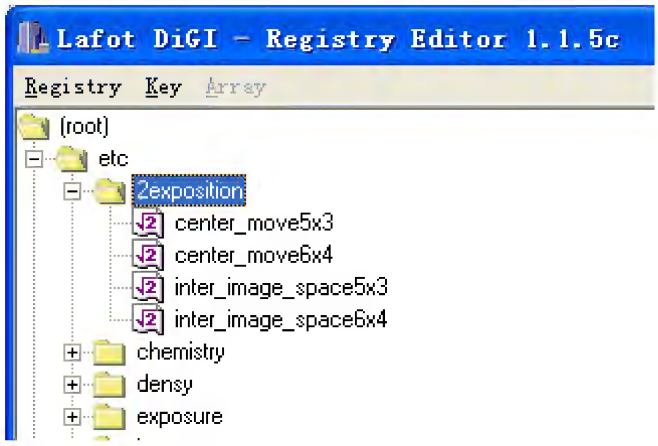
Usually this calibration has been done in the factory, no need to do it again by the user.

Purpose: To calibrate the image exposure center of the 152x102mm or 127x89mm photos which are printed by double exposure mode, this calibration shall be performed when white border appears on these photos while the ABCD calibration has been completed for the corresponding formats.

Precondition: The **ABCD calibration** has been completed for all the 152x102mm or 127x89mm formats.

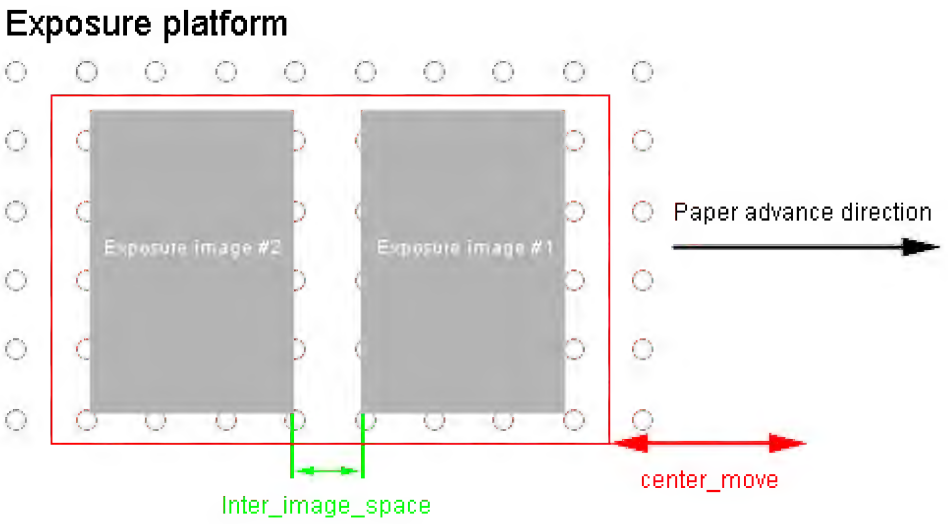
Steps:

- Copy **\\10.1.1.1\tables\centertest1.bmp** to Windows PC desktop.
- Open **Istudio**, load **centertest1.bmp** and print 2 test prints of this file. when the test prints coming out, mark the paper head and sequence immediately.
- In Linux Registry, modify the value of following key to correct the double exposure center.



Key name	Function
Center_move5x3	Move double exposure center of 127x89mm format. Plus value to move both of the exposure image rightwards on exposure platform; Minus value to move both of the exposure image leftwards on the exposure platform.

Center_move6x4	Move double exposure center of 152x102mm format. Plus value to move both of the exposure image rightwards on exposure platform; Minus value to move both of the exposure image leftwards on the exposure platform.
Inter_image_space5x3	Inter image space on the LCD of 127x89mm format double exposure. Plus value to increase the inter image space; Minus value to decrease the inter image space.
Inter_image_space6x4	Inter image space on the LCD of 152x102mm format double exposure. Plus value to increase the inter image space; Minus value to decrease the inter image space.



2.4 Temperature calibration

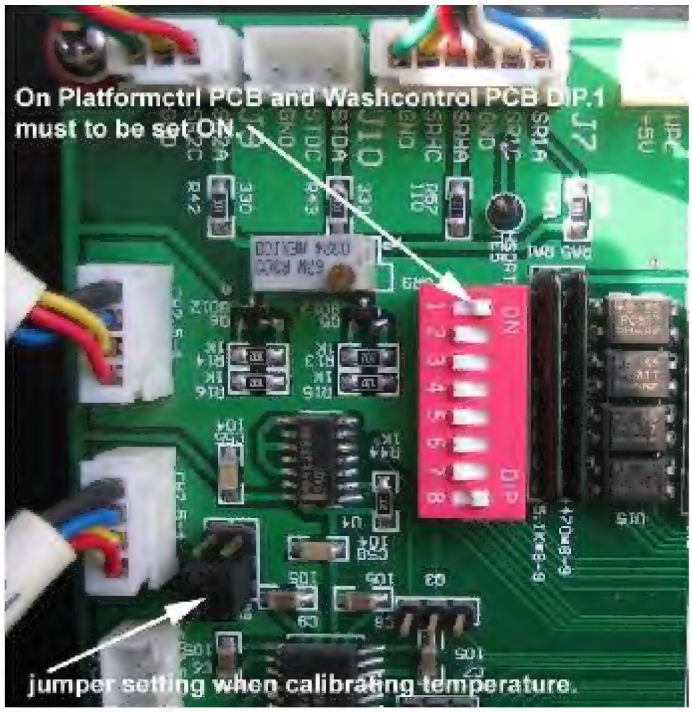
Purpose: To set up the temperature for each working tank according to the requirement of the processing solution, and calibrate the actual temperature of each working tank to be the same as its monitor display.

Precondition: The temperature of the processing solution has reached the set value.

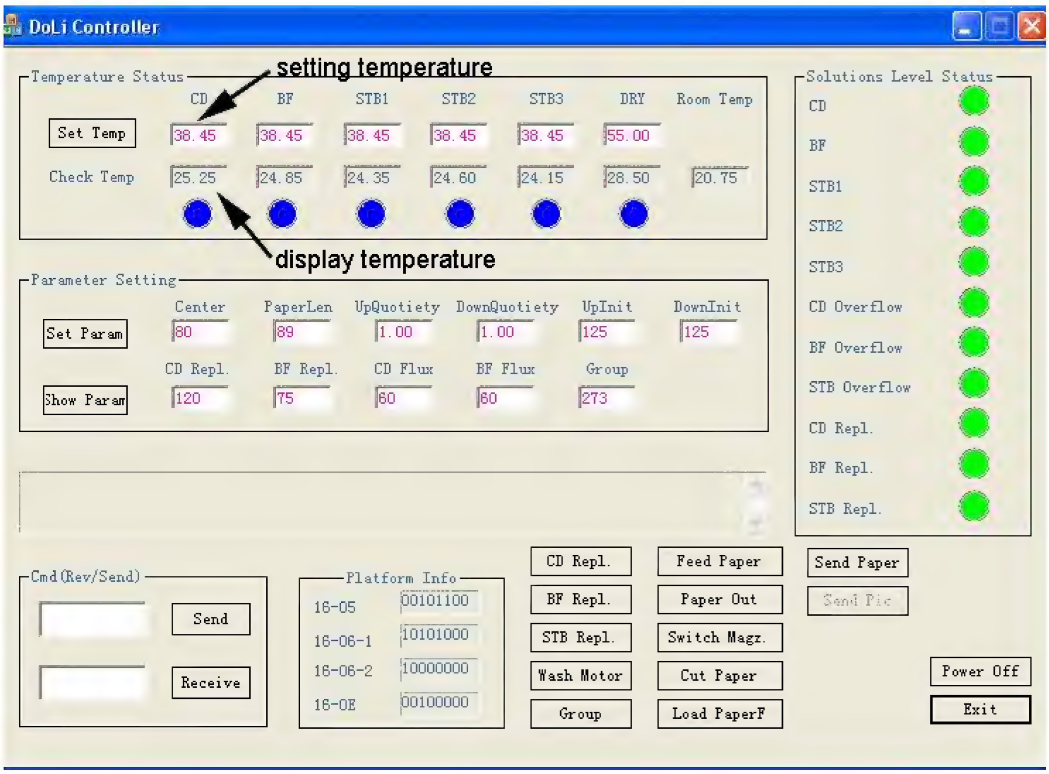
Tools required: Thermometer with 0.1℃ definition.

Steps:

- On Washcontrol PCB adjust the trimmer VR1, to get the voltage between TE4 and TE3 to be DC 0.273V.
- Shut down the machine.
- Set the Washcontrol PCB and the Platformctrl PCB DIP No.1 to ON.
- On the Q8 and Q9（on the left side of the DIP switch）of the Washcontrol PCB, there are 3 pins each, take off the 2 black jumper caps and plug onto the 2 lower pins.



- Turn on the machine.
- In DL-0810 machine Windows PC **DL-0810** folder find and run **DJ218Test**.



- Key in the temperature values for each tank and then click **save**.
- Measure the temperature of each tank by thermometer, and then adjust the appropriate trimmers on the Washcontrol PCB to get the display temperature matching the actual temperature which is read out of the thermometer.

  Trimmer definitions of the Washcontrol PCB are as below:

Trimmer	Definition
VR2	CD
VR3	BF
VR4	STB1
VR5	STB2
VR6	Standby
VR7	Dryer
VR8	Room Temp.
VR9	Standby

Take precaution when measuring to avoid chemical inter-contamination, when reading the thermometer, leave the thermometer in the tank.

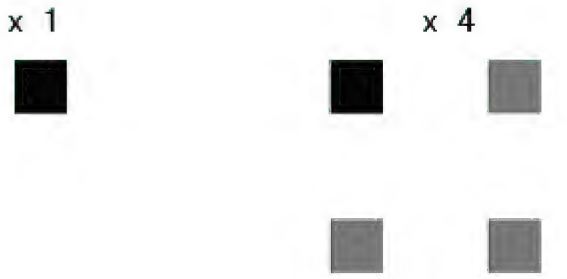
- Shut down the machine; restore the jumpers and the DIP setting.

2.5 Twister 4 calibration

A photo printed on a DL-0810 is composed of pixel matrix. DL-0810 uses a 1600×1075 resolution LCD for image making, so that for each time exposure, there will be a 1280×1024 pixel matrix coming onto the photo.

Actually this resolution is not good enough for the photographic business, so that DL-0810 use 4 times exposure technology to expose 4 times for each photo, a 3200x2150 pixel matrix will come onto the photo at the end.

During each time exposure the information on the LCD is different.



The position of each time exposure is controllable, the final result of the photo must be composed of a uniformly distributed pixel matrix, if 2 pixels are close to each other too much then there will be a overlapping effect so that it will come up the tiny horizontal or vertical lines or grid lines on the photos.

Purpose: To remove the strong grid lines of the photos which are printed by 4 times exposure mode, in the case the grid lines appear on these photos after several months, this calibration shall be performed.

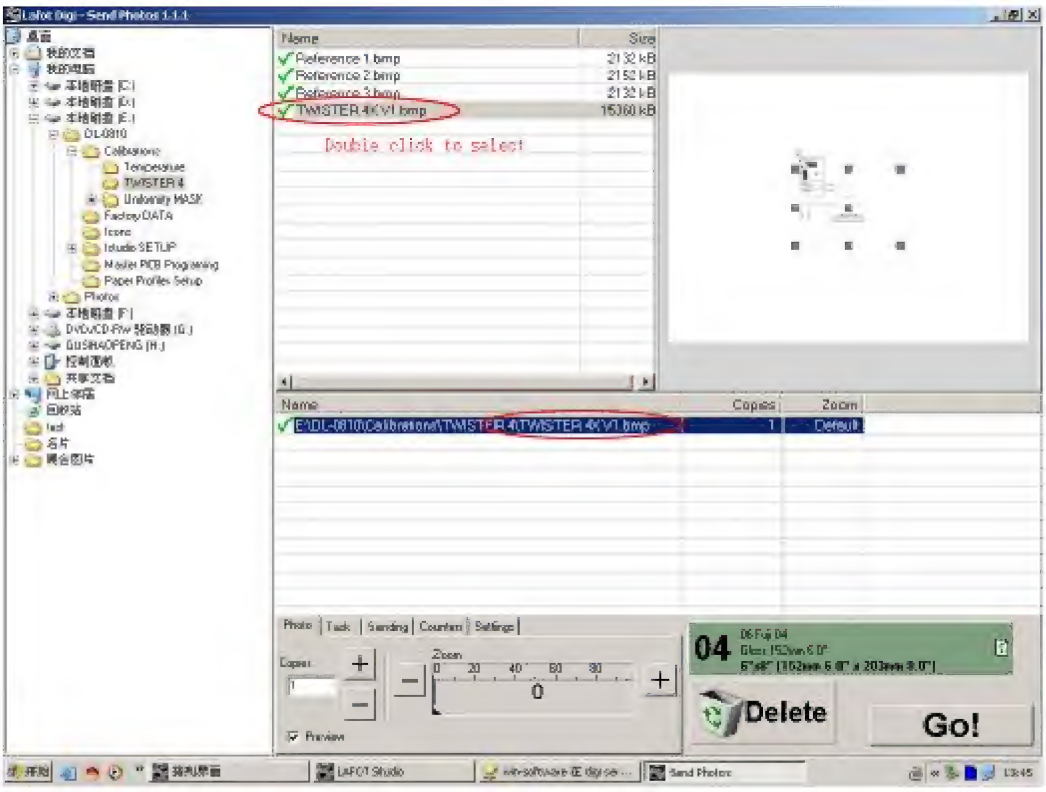
Tools required:

- Magnifier (at least 8X)
- 152mm glossy paper

Steps:

1. Send a test print.
   - On the DL-0810 machine Windows PC click **Run**.
   - Key in **\\10.1.1.1\win-software** and enter.

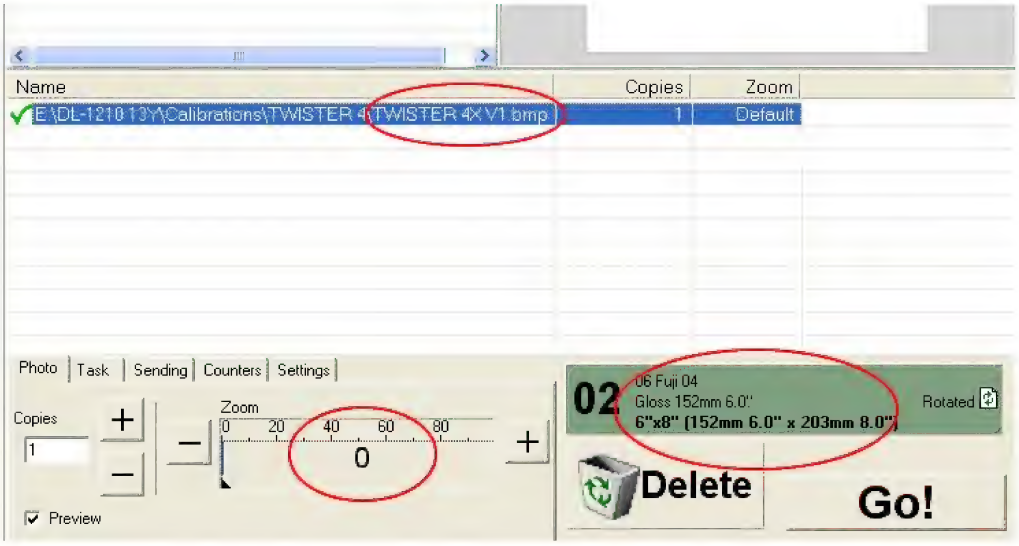
- **Run Sendp**.



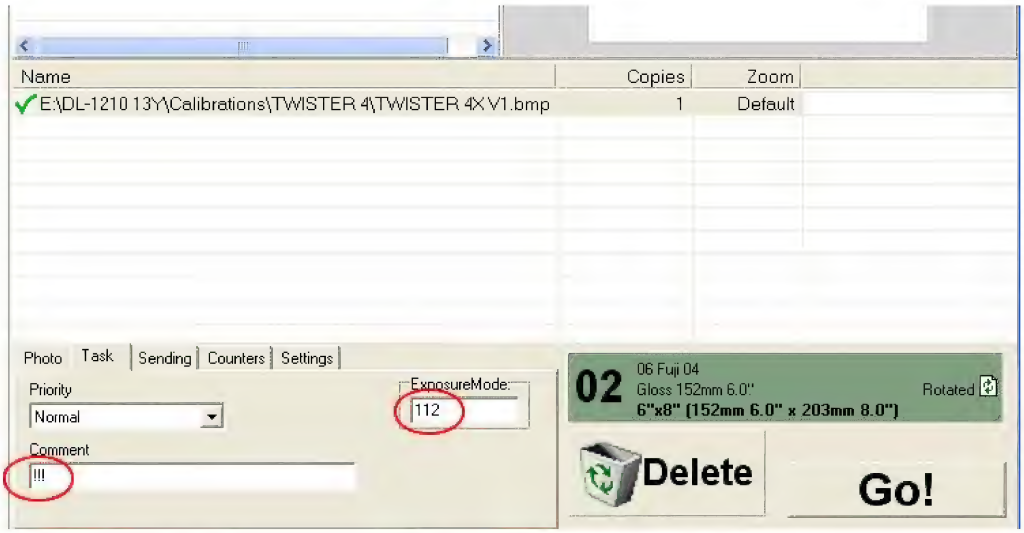
- Find **TWISTER 4X V1.bmp** file. Double click this file to add it to the printing list.

If you don't know where the file located, on the DL-0810 machine Windows PC click **start** > **search** to search the file.

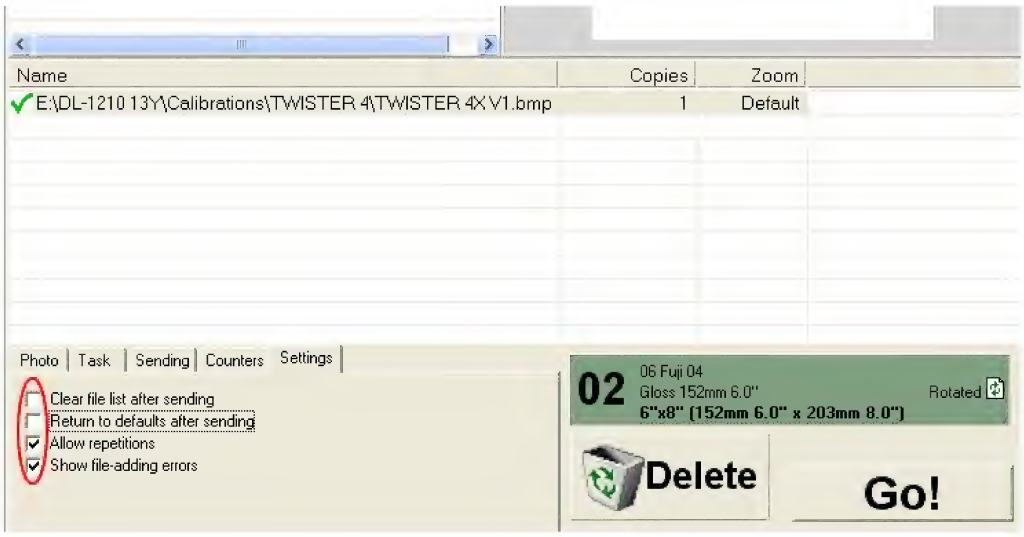
- Select format 152x203mm.



- On **Task** tab set **Comment** to !!!, and **ExposureMode** to 112.

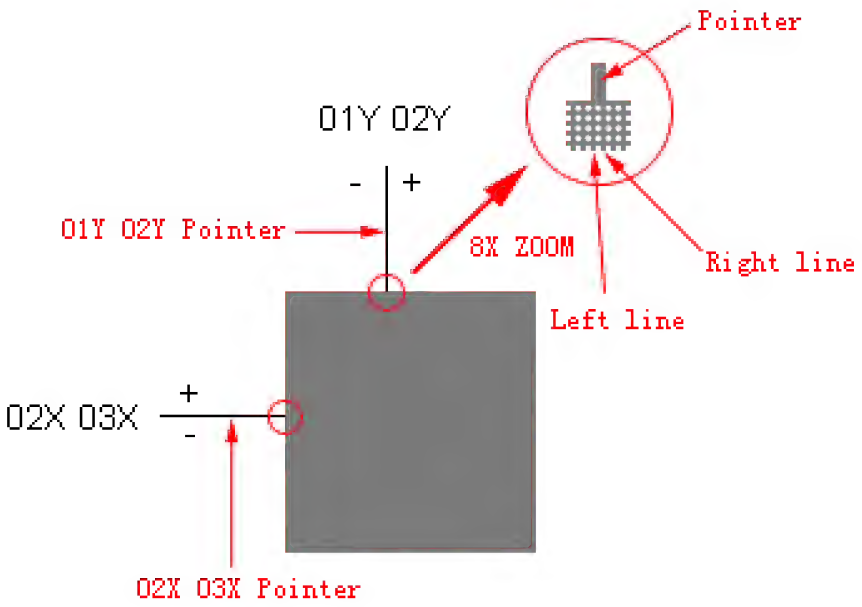


➢ On **setting**, configurations as follow:

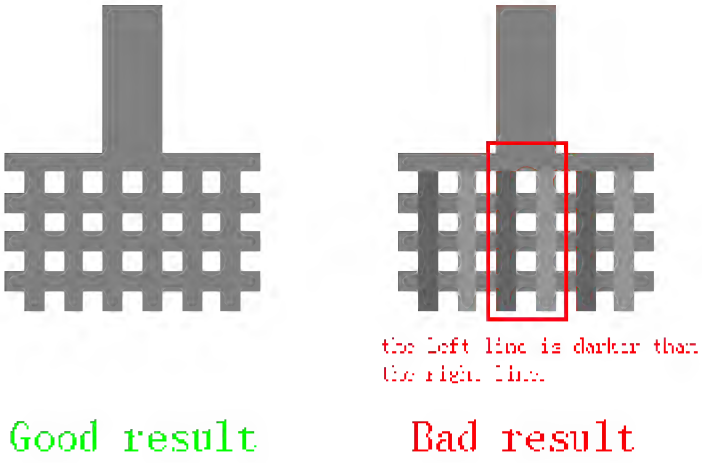


➢ Click **Go!** to send a test print then wait for coming out.

2. On the central district of the test print, observe the joint point between the **01Y 02Y** pointer or the **02X 03X** pointer and the square by magnifier.



An bad result as following example:



Usually there are two lines beneath the **01 02Y** pointer, the density of these 2 lines shall be the same. Otherwise the **01 02Y** line shall be moved to the direction of the darker line.

- Assuming the density of the left line is higher than the right line, the **01 02Y** pointer shall be moved leftwards. The left side of the **01 02Y** line is a minus (-) sign, therefore in the Linux registry **etc/twister/advanced/** the key **01Y** and **02Y** shall be decreased the same value in the meantime, such as: -2.
- Click **save now**.
- Go back to **Sendp**, click **Go!** to send a new test print, repeat the above adjustments until the result is good.
- The adjustment methods of **02X** and **03X** is similar.

2.6 Uniformity calibration

Note: The information of this section is only for DL-0810 machines which assembled with a EPSON-13U LCD. Some early machines may use other LCD model like EPSON-13Y, Please contact service@doli.com.cn for more information of EPSON-13Y.

To Identify the LCD model of your machine, simply check the LCD driver board, The picture on page 119 of this manual indicate an EPSON-13U driver board; EPSON-13Y LCD uses a different look LCD driver board.

Purpose: To calibrate the uniformity of color or density to be the same at each district of the photo; to remove the slight vertical lines on the photo.

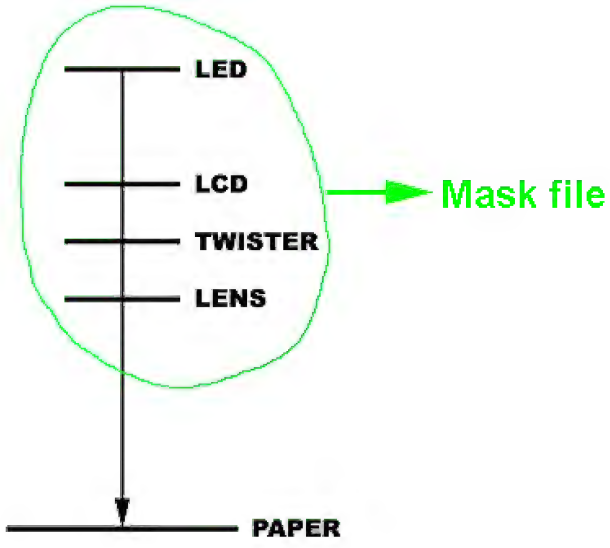
If you print a photo from a neutral grey test film or a neutral grey test file, and the result is uniform neutral grey at each district of the photo, then the density and uniformity of the photo shall be good.

Usually there is a diffuser (mirror box) in film minilab, of which the function is to convert the diffusive light emitted from halogen lamp to coherent light (parallel light), so as to get a uniform neutral grey photo.

There is no diffuser in DL-0810. However the density uniformity result of the photo which is printed from a neutral grey test file is perfect. This attributes to that DL-0810 adopts software control the transmissivity of each LCD liquid crystal particle that is on LCD to simulation the effect of a diffuser.

Mask file records the transmissivity correction of the LCD liquid crystal particles, of which the file extension name is prn.

So the Mask file is a virtual diffuser.



Mask file is a total compensating result of exposure unit. There 4 lenses in DL0810, so that there are 4 Mask files needed for the printing for each lens.

The Mask file shall be re-calibrated when the following event occurs:

- Replace LED
- Replace LCD
- Replace LCD Driver board
- Adjust LCD Driver board
- Replace lens
- Slight vertical lines appear on the photos

Tools required:

- A4 flatbed scanner which is with 24 bit color and 600dpi scanning capability
- **Photoshop** software
- 152mm glossy paper

Preconditions:

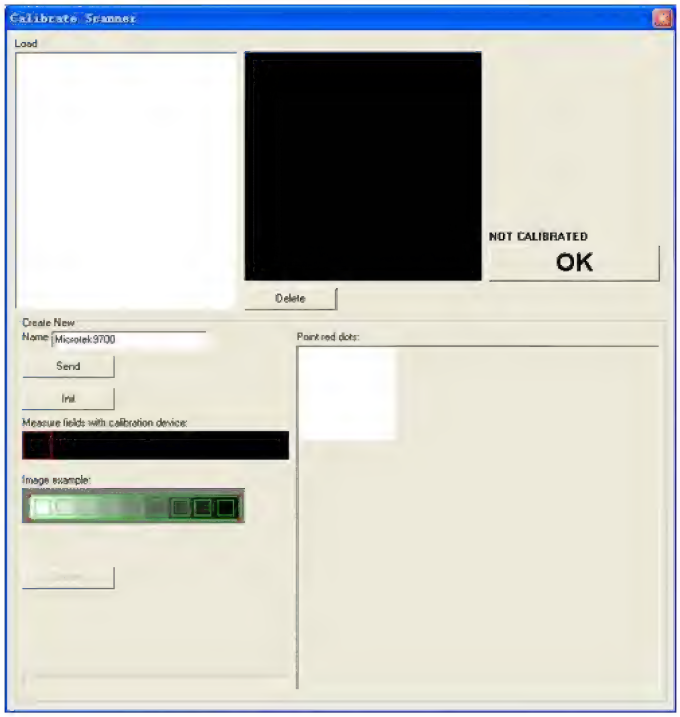
- The scanner has been cleaned so that there is no dust or finger mark on it.
- The **Maintenance** > **Calibrations** > **paper characteristic** has been completed for the 152mm glossy paper.
- The scanner has been calibrated if necessary.

The scanner calibration shall be performed only if the deviation of the color or density between the scan image and the scan object are big.

If scanner is good, you can skip this step by just selecting a scanner profile from the list.

Steps of scanner calibration:

- On the DL-0810 Windows PC find and run **Scan0.5.2BIG**
- Click **Calibrate scanner** to entering the following interface:



- In **Name** key in a file name for the new scanner profile, for example **my scanner**.

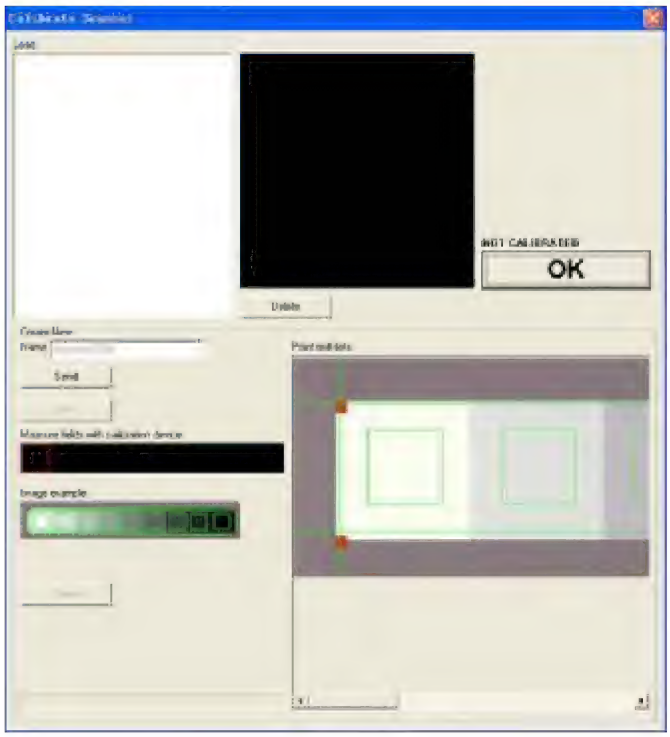
- Click **send** to send a test print.

The test print will be printed by the default format of current cassette. You can set a default format for each cassette:

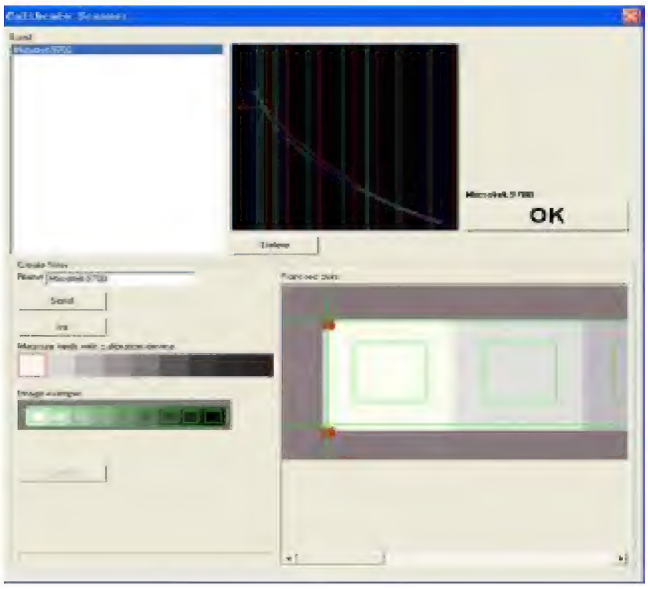
  - Open **Maintenance**.
  - Select **paper roll installation** then click **Next**.
  - Select a cassette ID.
  - Select a default format for the cassette ID you have selected.

- After the test print comes out, scan this test print by 300dpi and 24bit color mode, and then save as a bmp file.
- Crop and rotate the scan image by **Photoshop**, and then **Save**.

- Go back to **Scan052**, Click **Init** to import the scan file, comes up the following interface



- Measure 9 grey scales of the test print by densitometer one by one from left to right.
- Click **Create** after finish, **myscanner.tsc** file will be created.
- On the top left of the window highlight **myscanner.tsc** and then click **OK**.



Steps:

1. Open **mesg**.
    - On the DL-0810 machine Windows PC Click **start**.
    - Click **Run**.
    - Key in **\\10.1.1.1\win-software** then enter.
    - Run **mesg**.
2. Calibration.
    - On **Scanner** tab of **Scan052BIG**, under **Lens** select **Lens 000**.
    - Select **125 x 228mm** format under **Format** (If you don't have this format, create it in **maintenance** -> **formats** and complete the "ABCD" calibration).
    - Click **send** to send a test print.
    - After the test print comes out, scan it in 600dpi and 24bit color mode.

      When scanning, the scanner must avoid shaking.
    - Save the scan image as a 24bit bmp file.
    - Open the scan image in **Photoshop**.
    - On Keyboard press Ctrl + Alt + 0 key to view the image in actual pixel size.
    - Use **Clone stamp** tool to remove the dusts or scratches or other defects of the scan image which is not caused by exposure.

      This is very important, carefully remove all the defects, make sure it is not caused by exposure then remove it.
    - After cleaning the image, carefully extend the image border **Clone Stamp** tool.

    This is very important also, because the 152 x 228mm format is too small to have 100% the image on the LCD exposed on the paper, without this step computer

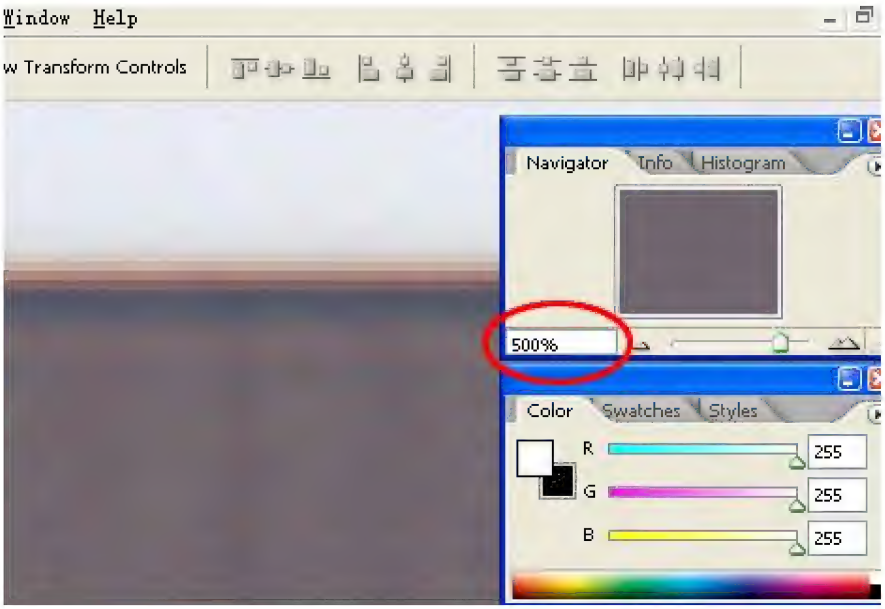
will do wrong calculation on the image border, so that the photo could be printed with a red border.

It is recommended that you take some time to exercise the **Clone Stamp** tool of **Photoshop** before you do this step until you can make precise image clone operation.

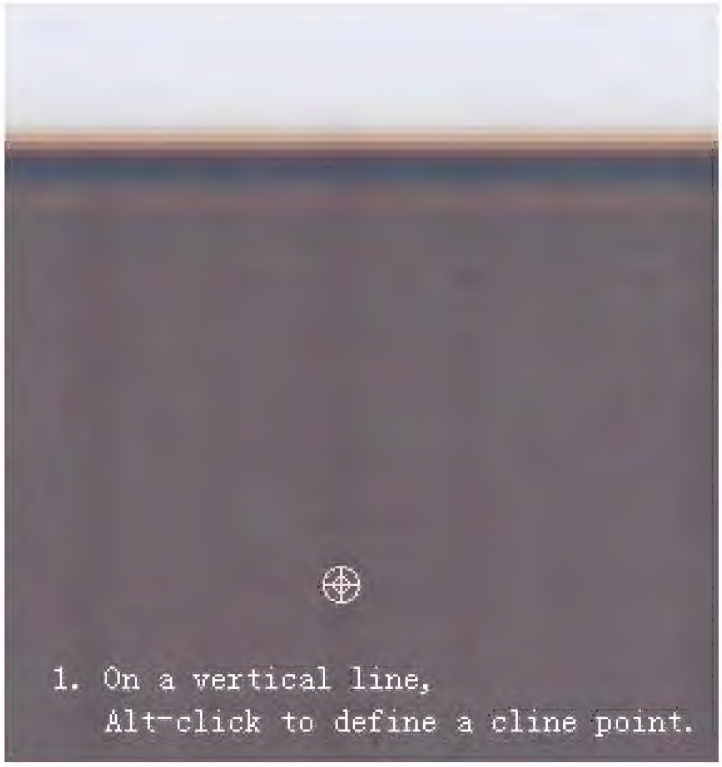
This step may need a little time, the more you exercise, the faster you can do it.

Keep in mind: it is very important that you make vertical image clone precisely.

Zoom the image 500%:



Then suggested procedure for example:


1. On a vertical line,
Alt-click to define a cline point.


2. Don' t release Alt,
Move the mouse uprightly to the border.

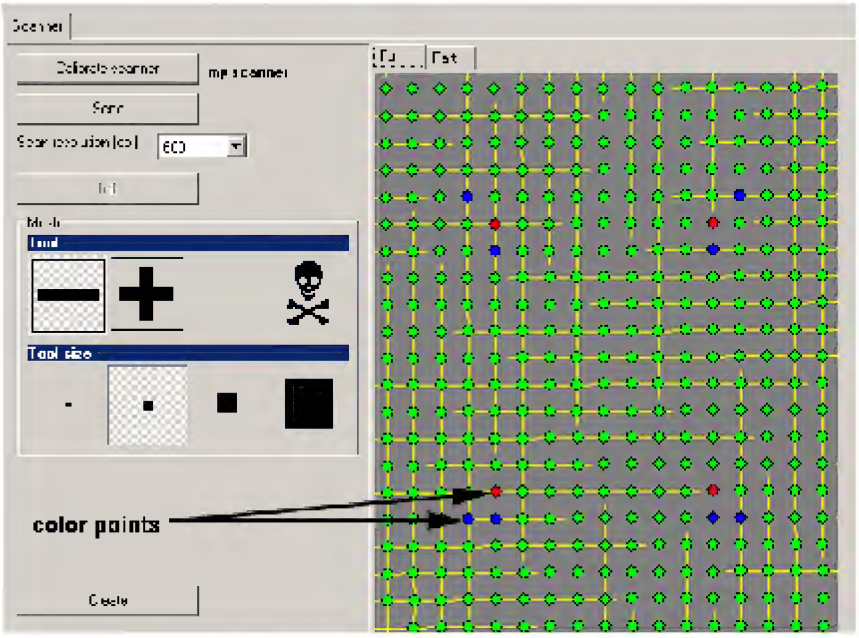
- Save the image after finish.

  You can name the file as s1 or s2 etc., which means this scan image is the first or the second scan so that the file name is logical.

- On **Scanner** tab of **Scan052BIG**, check the **scan resolution that** must be

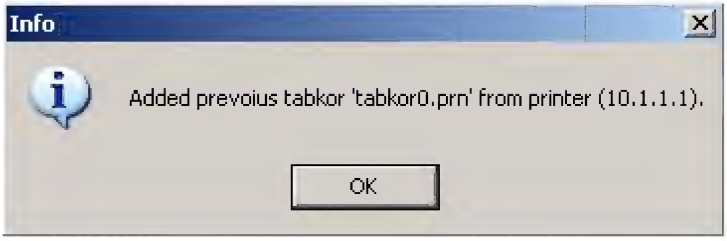
600 dpi, and then click **init**.

- Specify the scan image file, and then click **open**.
- Wait one minute, and the following information will appear (Fig 2.7.12):



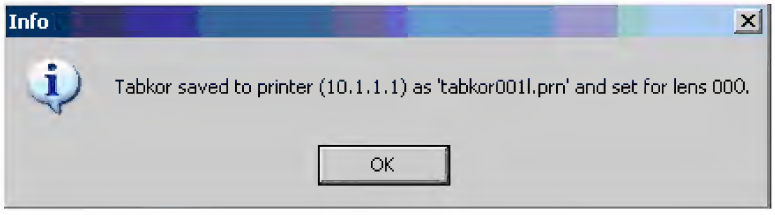
- You shall see the color points. The computer recognizes the scan image direction by the red and blue points that come from the test file so that you do not need to worry about the direction of the test print during the scan.
- If the red or blue points are missing, usually it is caused by the shaking during the scan, in this case send a new test print and then scan again.

- Click **Create** and wait one minute, comes up the following message.



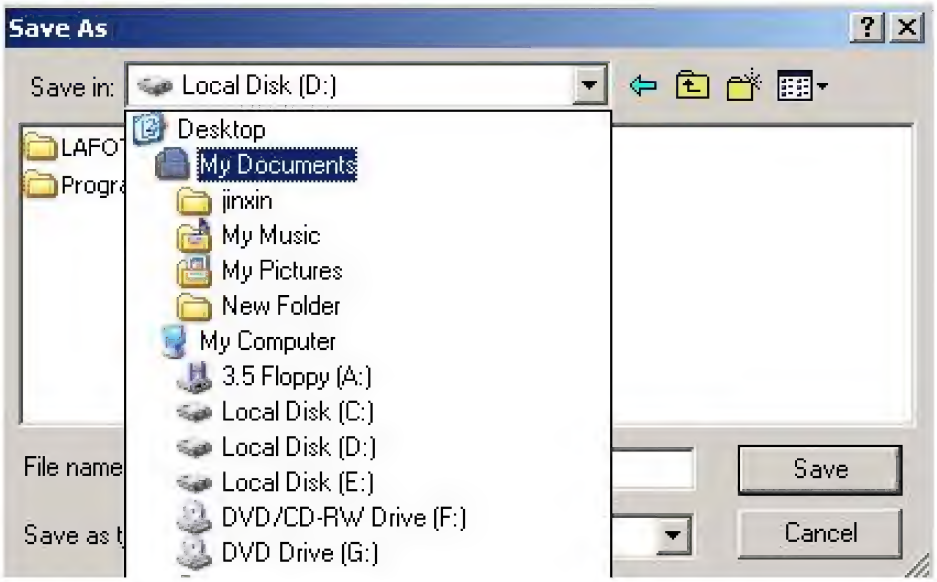
This message means the computer has read the previous mask file from Linux PC.

- Click **OK**, then comes up the following message:



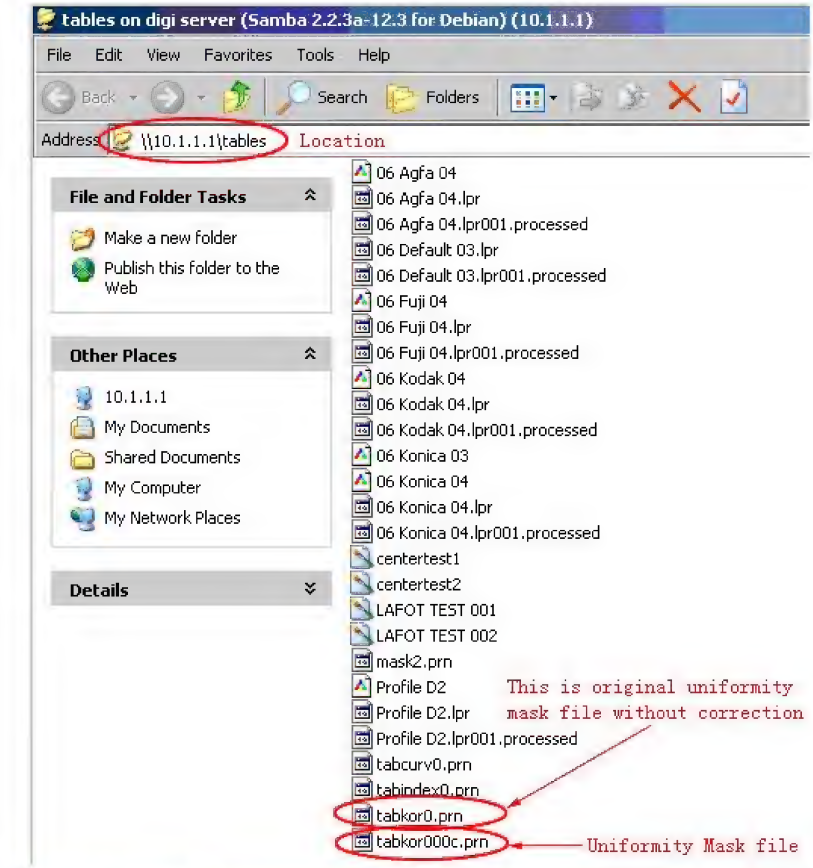
This message means the computer has created a new mask file for the lens 000 base on the last file and saved the new file to the Linux PC.

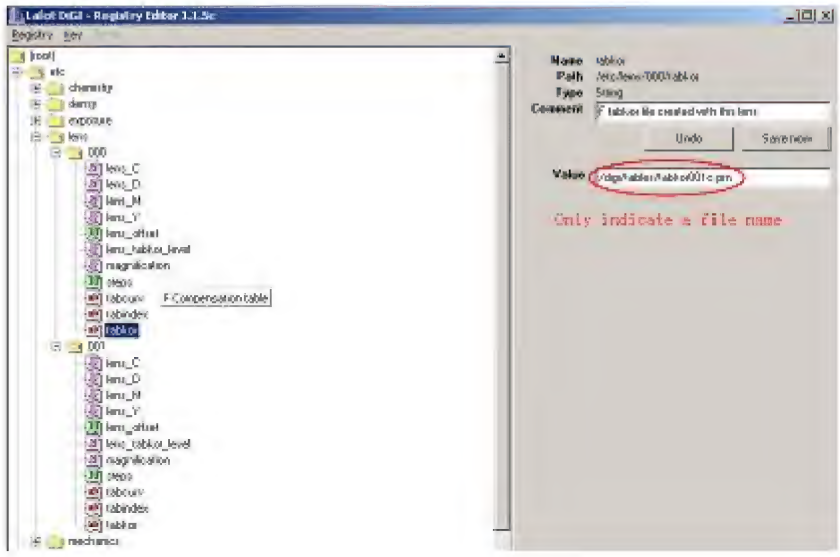
- Click **OK**.
- Now the computer is asking to save this new file to Windows PC as a backup, just select a directory on Windows PC and Click **Save**.



- Repeat the above procedure (send test print, scan, then clean the image, extend image by **Clone stamp**) until you are happy with the uniformity result.

- The Mask files are saved in **\\10.1.1.1\tables** folder, the value of **tabkor** which is under **etc/lens/000** in the Linux Registry only indicate a file name .
- While printing, in **lregedit** computer will go to **etc/lens/000/tabkor** to see which Mask file shall be used, and then go to **\\10.1.1.1\tables** to read the corresponding file.



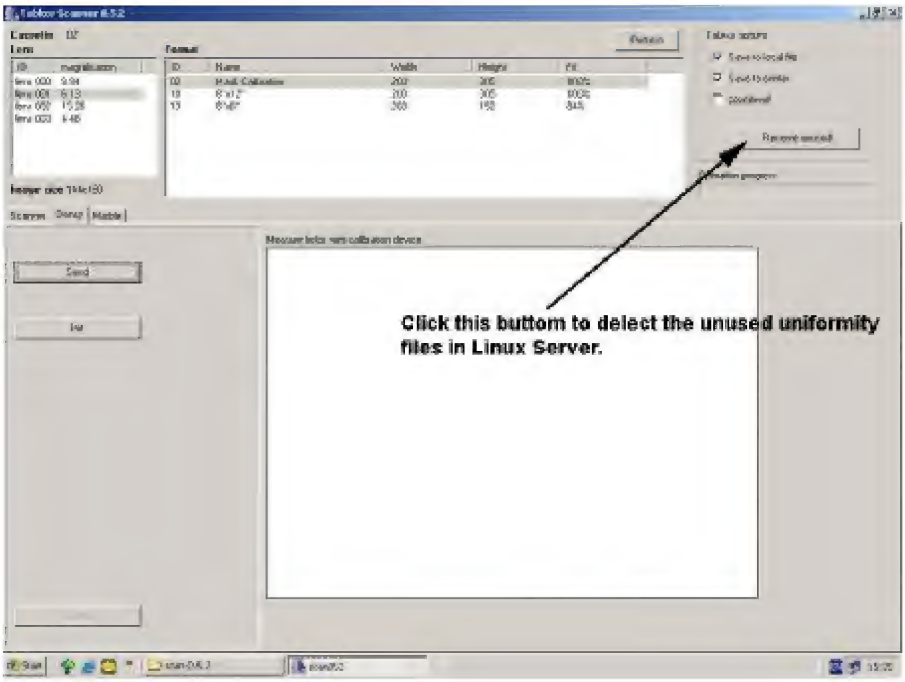


- If the computer can not find the corresponding file in the **\\10.1.1.1\tables** you will see a warning message below:

In this case you shall copy the corresponding tabkor file which you have backup on the Windows PC when being asked by **Scan052BIG** during the calibration procedure to the **\\10.1.1.1\tables**.

3. Delete the unused Mask files in Linux PC.

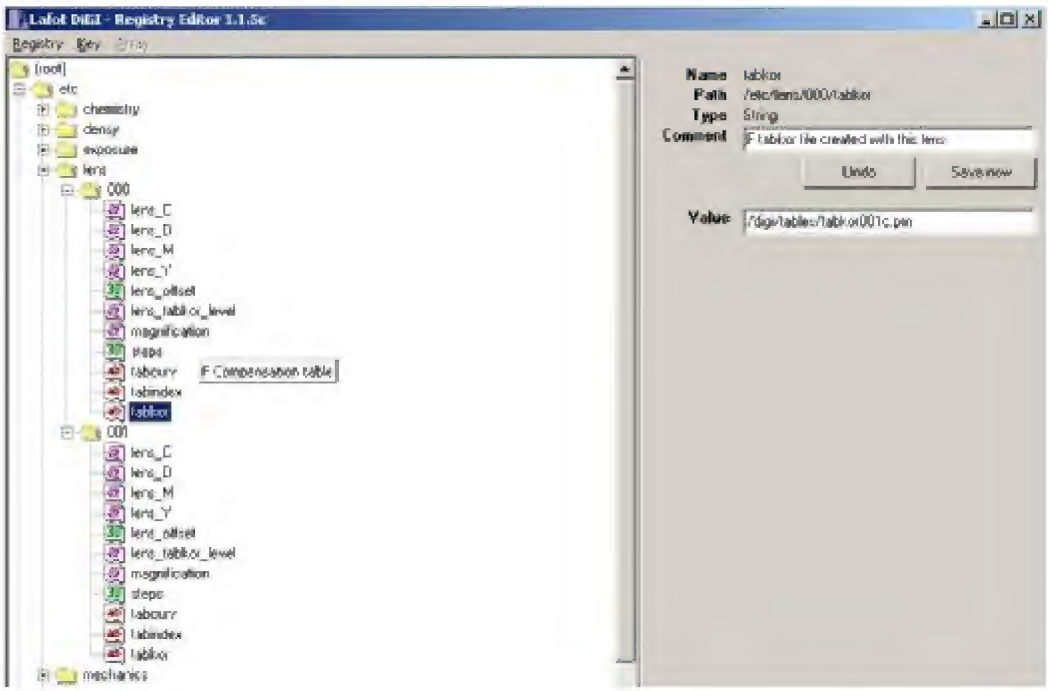
In **Scan052BIG** Click **Remove unused** to delete all the unused files in Linux PC.



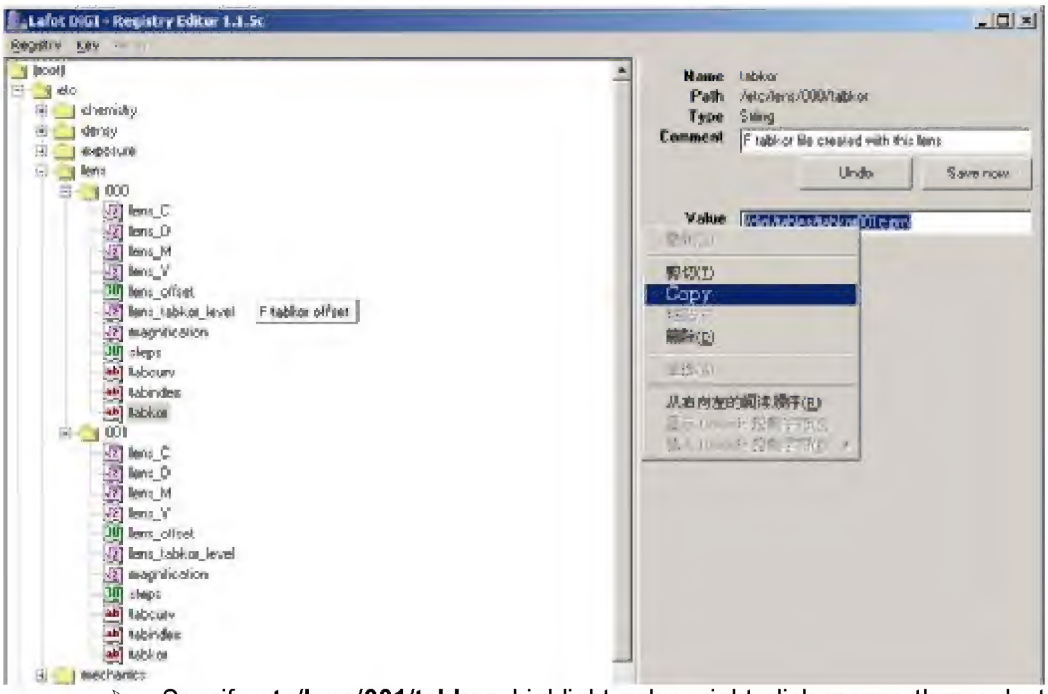
Linux system will work more efficiently after the rubbish files have been cleaned.

4. Completion

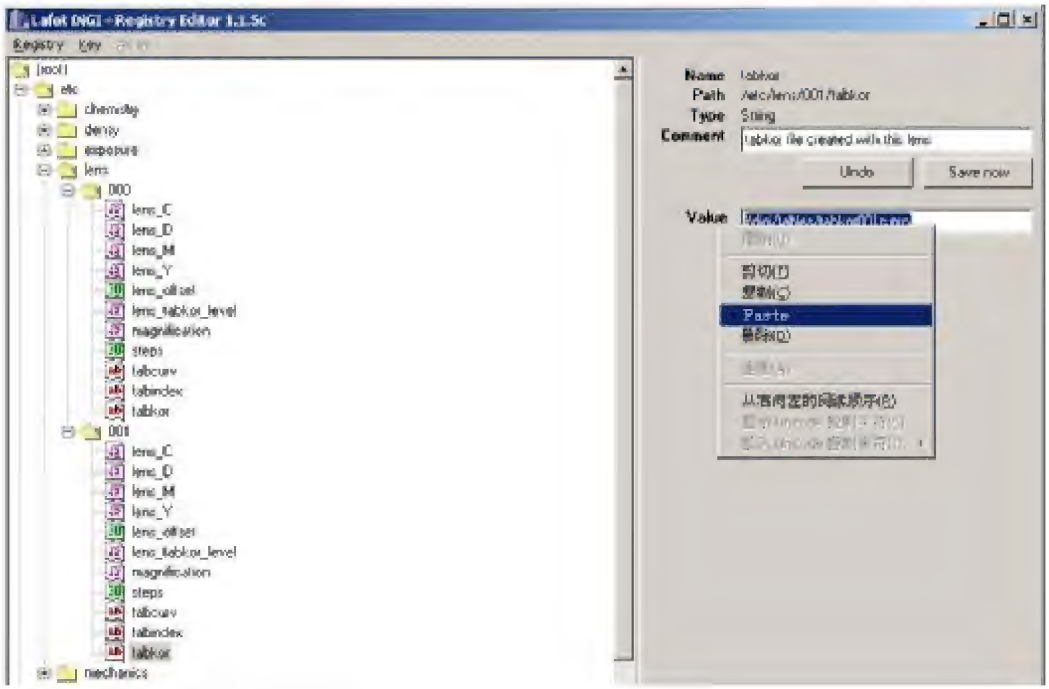
   - Open Linux Registry (in **\\10.1.1.1\winsoftware** open **lregedit**).
   - Unwrap **etc/lens/000** and **etc/lens/001**.



   - Specify etc/lens/000/tabkor, then **highlight** value, right click mouse and click copy.



➢ Specify **etc/lens/001/tabkor**, highlight value, right click mouse then select **Paste**.



➢ Click **Save now**.

If red border appears on the photo after scanning, check **Clone stamp** operation in **Photoshop**, you may have to restart the calibration procedure from an early .prn file which doesn't bring red border to the photos.

To restore an early .prn file to Linux PC before restarting the procedure:

➢ Copy and paste the file into Linux PC **\\10.1.1.1\tables** folder from Windows PC(assume that you have backup the early file to Windows PC).

- Open Linux registry, specify **etc/lens/001/tabkor**, change the file name according to the file you just copied, then click **Save now**.
- specify **etc/lens/000/tabkor**, change the file name according to the file you just copied, then click **Save now**.

In factory, Uniformity Mask is calibrated by a special method-attach a special Lens below the lens of DL-0810 to reduce the exposure image on the paper, this is the best way by which you don't have to extend the border of the scan image by **Photoshop**, but focus adjustment is needed during the factory procedure by a CCD camera. It is not possible and not necessary for user to use the factory method, but in case of red border appear s and not possible to be avoided, factory procedure shall be performed in stead of **Photoshop** method.

Please ask dealer for further information.

2.7 Replenishing system setup

Purpose: Setup the replenishing system to meet the requirement of the chemistry instruction.

Tools required: Measuring cup

Steps:

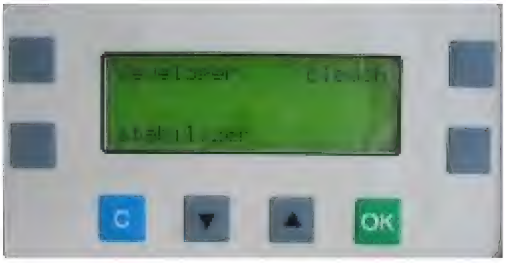
1. Measure the flux of the CD replenishing pump.

   - Remove the left side cover of the machine, and then put the replenishing pipe outlet to the measuring cup.

   - On Linux LCD panel, press any button of the top 4 buttons to enter following interface:

   - Press the button on the left to **Pumps** to enter the following interface:

- Press the button on the right to **regenerations** to enter the following interface:



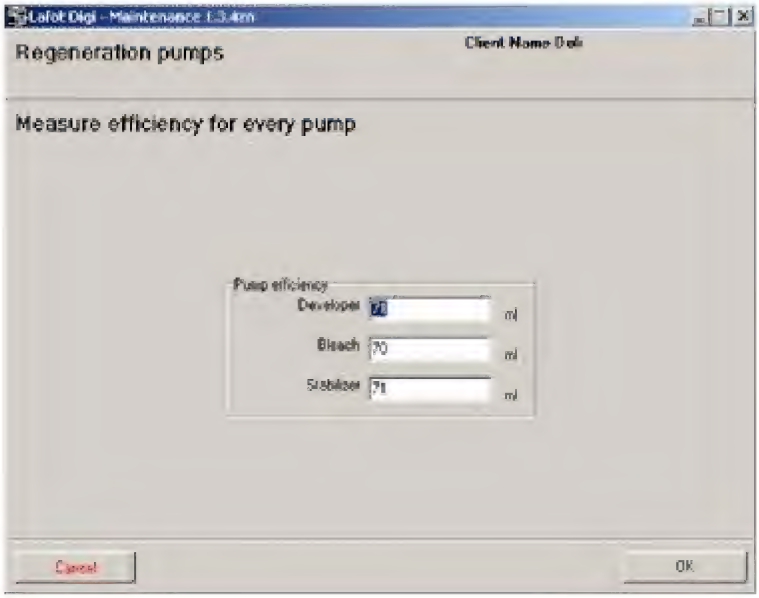
- Press the button on the left to **developer** to run CD replenishing pump 30 seconds.

  - The replenishing pump runs 30 seconds and then stops automatically for each time test.
  - For the first time measurement, if there is a little air inside the pipe, throw away the chemistry and then test again.

- After the pump stops, repeat running the pump, all together run the pump for 5 times.
- Carefully put the replenishing pipe outlet back to the tank, and then read out the total chemistry value of the measuring cup.
- Calculate the average value of the CD replenishing flux for 30 seconds by dividing the total value by 5.

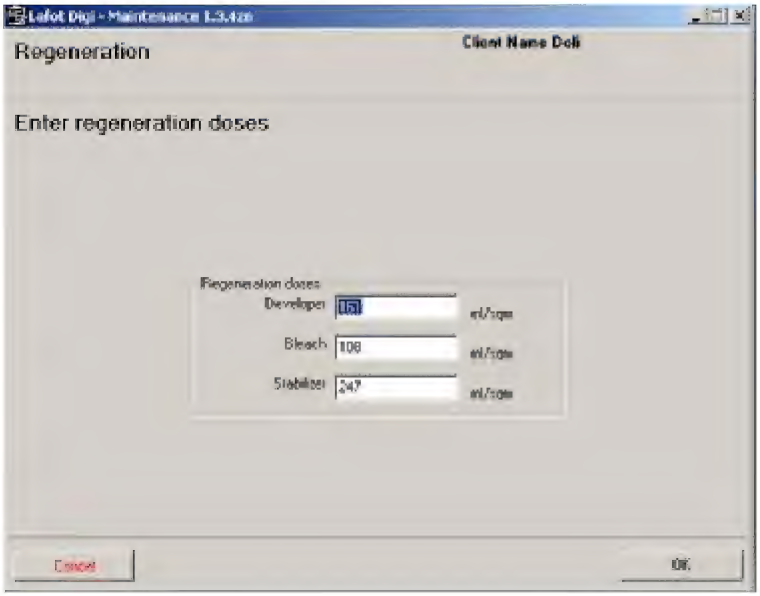
2. Input the CD replenishing flux into **Maintenance**.

- Run **Maintenance**, and select **Regeneration pump efficiency** and then click **Next**.
- Input the CD replenishing flux value in **Developer** and then click **OK**.



3. Repeat for BF.
4. Repeat for STB.
5. In **Maintenance** > **Regeneration doses** setup the Regeneration does value depending on the chemical specification you are using.

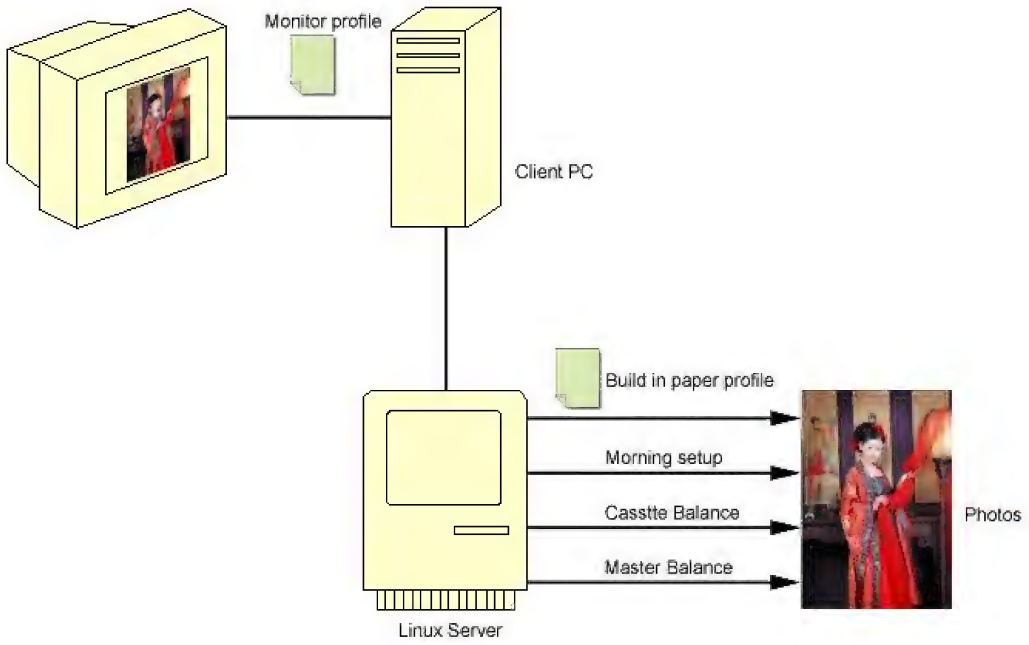
6. Please delete this section!! In **Maintenance** > **Regeneration doses** setup the Regeneration does value depending on the chemical specification you are using.



If the daily print quantity is small, and you want to keep the chemical active, the **Regeneration doses** value could be increased a little bit.

2.8 Color management-from monitor to photos

Purpose: to ensure the color of the photos look as close as its preview on the monitor.



Preconditions:

- Calibration with Densitometer has been performed..

3.1 DL-202P Densitometer

- Standard ambient light has been installed in the Studio.

It is recommended to use Philips true color fluorescent lamp as the standard ambient light of the studio, ask Philips sales and service people for more information about the fluorescent lamp selection and installation.

Work flow:

1. Calibrate monitor.

- If the monitors color fidelity is good and support sRGB color management, set the monitor to the sRGB mode.

  - To see if the monitor's color fidelity is good, Open **Photoshop**, the background of **Photoshop** shall appear to be neutral grey.

- If the monitor supports sRGB color management, sRGB mode can be set in the monitor adjustment menu, that is usually under **color management**.
- sRGB is the working color space of **Istudio** and most digital camera.

- If the monitor color fidelity is not good (for example: old monitor) or it does not support sRGB color management, first on the monitor adjustment menu set the monitor color management to 6500K, and then create an icc profile for the monitor by **Adobe Gamma** or other software.


Refer to related books of **Photoshop** for **Adobe Gamma**.

2. Register paper profiles.

   Paper profiles have been created in the factory for each brand and built in the Linux PC. For user, just select the correct paper profiles for the cassettes when register the cassettes, for example: cassette 01 is loaded Kodak paper, so that you shall register cassette 01 as Kodak band.

   - Run **maintenance**.
   - Select **paper roll installation** and then click **Next**.
   - Select cassette numbers for **registration**.
   - Select paper profile for the cassette number which you have just selected.
   - Complete other registrations.


If the paper profiles is deleted or lost by accidental error, the corresponding paper brand will not be available in the list of **Paper roll installation**. In this case, backup all the calibration data of the machine, reinstall Linux system with Linux recovery CD, and then restore all the calibration data.

- **3.2** Data backup and restore
- **3.3** Linux system backup and recovery

3. Complete the morning setup.


2.1 Morning setup

4. Print sample photos, compare the color between the photos and the monitor preview. If still not satisfied, use **Cassette balance** or **Master balance** for ultimate control.

The color could be managed from monitor to photos but they will not be 100% the same. Photos and monitor interpret color in different ways. Usually the photos are more brilliant than the monitor preview since the photos belong to another color space which is bigger than sRGB and the color has been transferred to a wider range than sRGB during the printing and processing.

- To use **Cassette balance**:
  - Run **Maintenance**.
  - Select **Cassette balance** and then click **Next**.
  - Select cassette number and then click **Next**.
  - Change the values of C, M, Y, D, for example: + or -0.01.
  - Click **OK**.
- To use **Master balance**:
  - Run **Maintenance**.
  - Select **Master balance** and then click **Next**.
  - Change the values of C, M, Y, D, for example + or -0.01.
  - Click **OK**.

  After modifying the values, print sample photos again and repeat the above procedure until satisfied.

- **Cassette balance** only affects the color of the photos of the given cassette.
- **Master balance** affects the color of the photos of all the cassettes.
- Neither **Cassette balance** nor **Master balance** affects the test prints of the morning setup.
- Either **Cassette balance** or **Master balance** can be used for quick color control especially for black and white photos.

3

Chapter 3 Service

This chapter contains information for service personnel.

Prologue

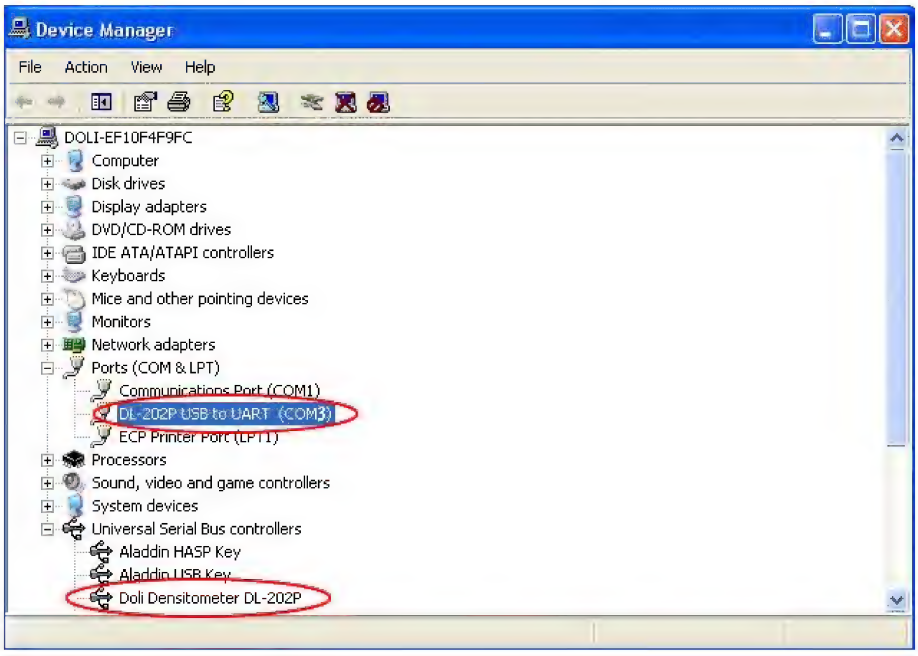
Take sometime to read the manual and study the machine until you understand everything well before you perform the service.

Ask somebody for help if you are not confident with the things you are going to do to avoid serious problems.

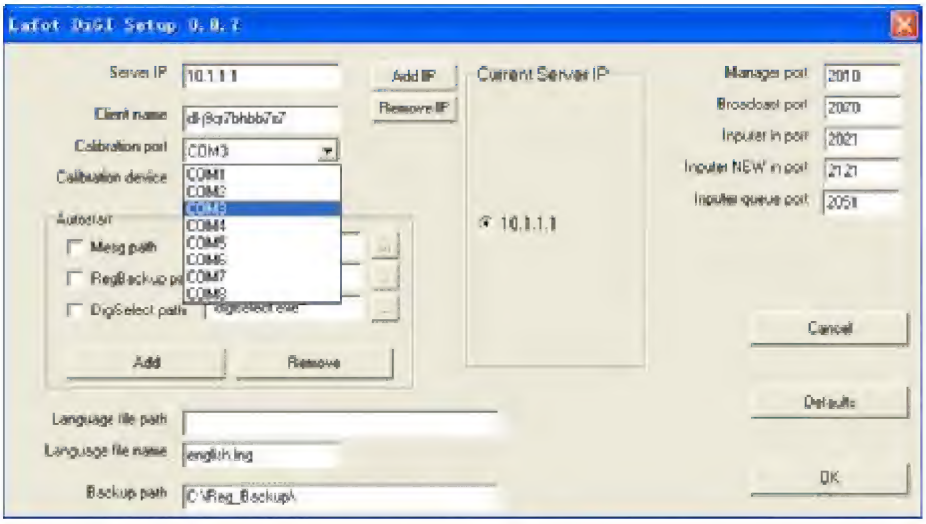
3.1 DL-202P Densitometer

Installation

1. Insert the densitometer CD to CD-ROM.
2. Attached the densitometer to Windows PC USB2.0 Port.
3. Follow the Windows XP “Find new hardware wizard” to complete the densitometer installation.
4. Check COM port number in “Windows Device Manager”, for example, on the following illustration we can see that the densitometer has been attached to Windows PC COM3.



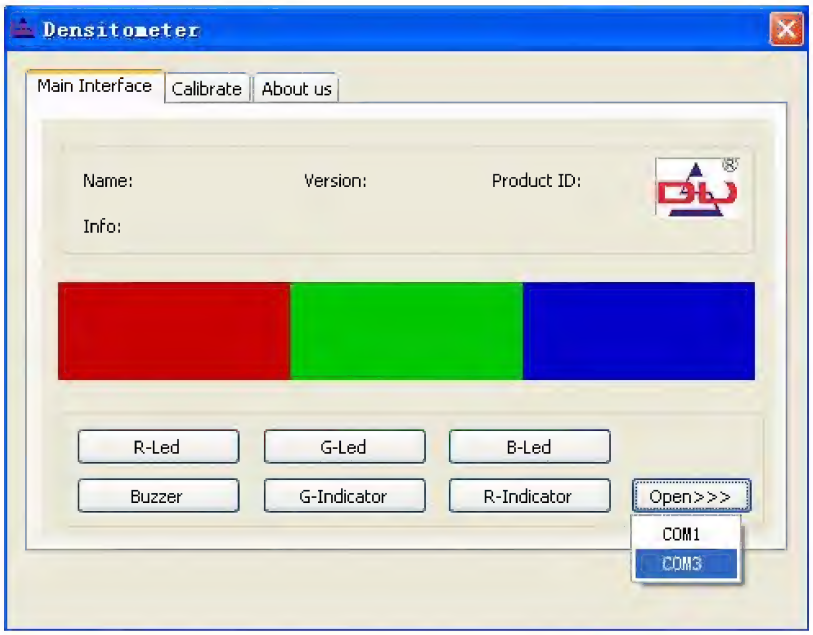
5. On the Windows PC, click Start, and then Run, and then key in \\10.1.1.1\winsoftware, and then enter.
6. Run Config.



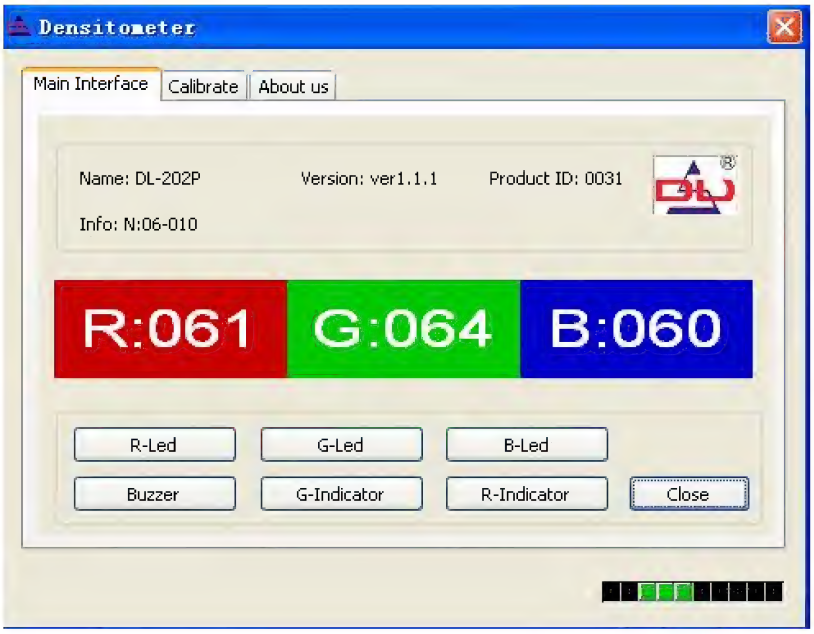
7. In Calibration port box, select the correct COM port number.
8. Click OK to close Config.

Show densitometer test value

1. Open DL-202P User Interface (Usually in Windows PC E:\DL-1210\DL-202P densitometer or E:\DL-2300\DL-202P densitometer folder).
2. Click Open>>> and then select COM port number.

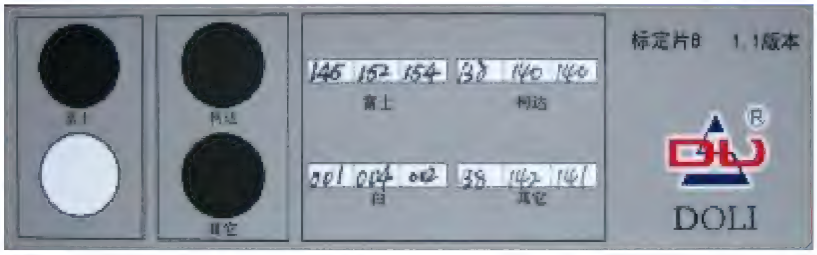


3. Make measurement, test value will be displayed.



Calibration

1. Find the densitometer calibration tablet.

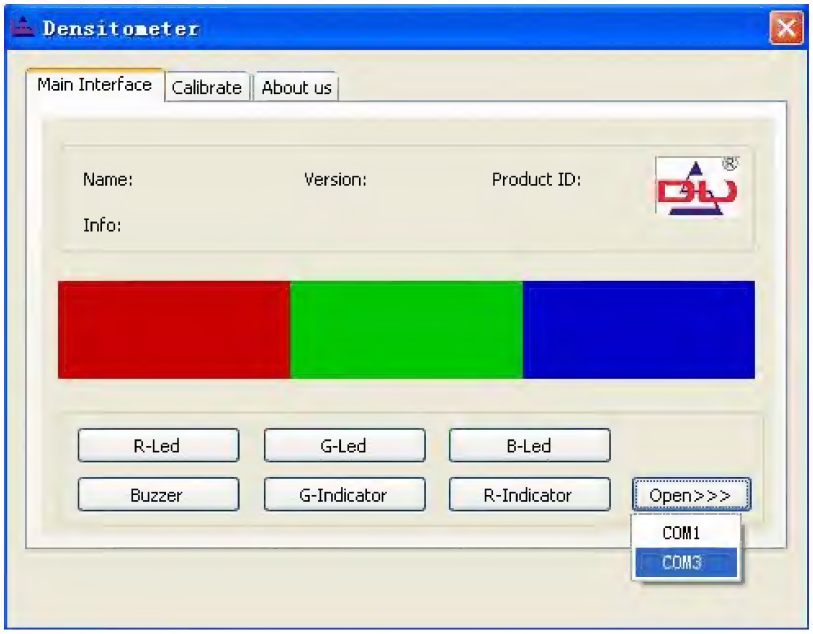


densitometer calibration tablet

Note: densitometer calibration tablet must be kept clean.

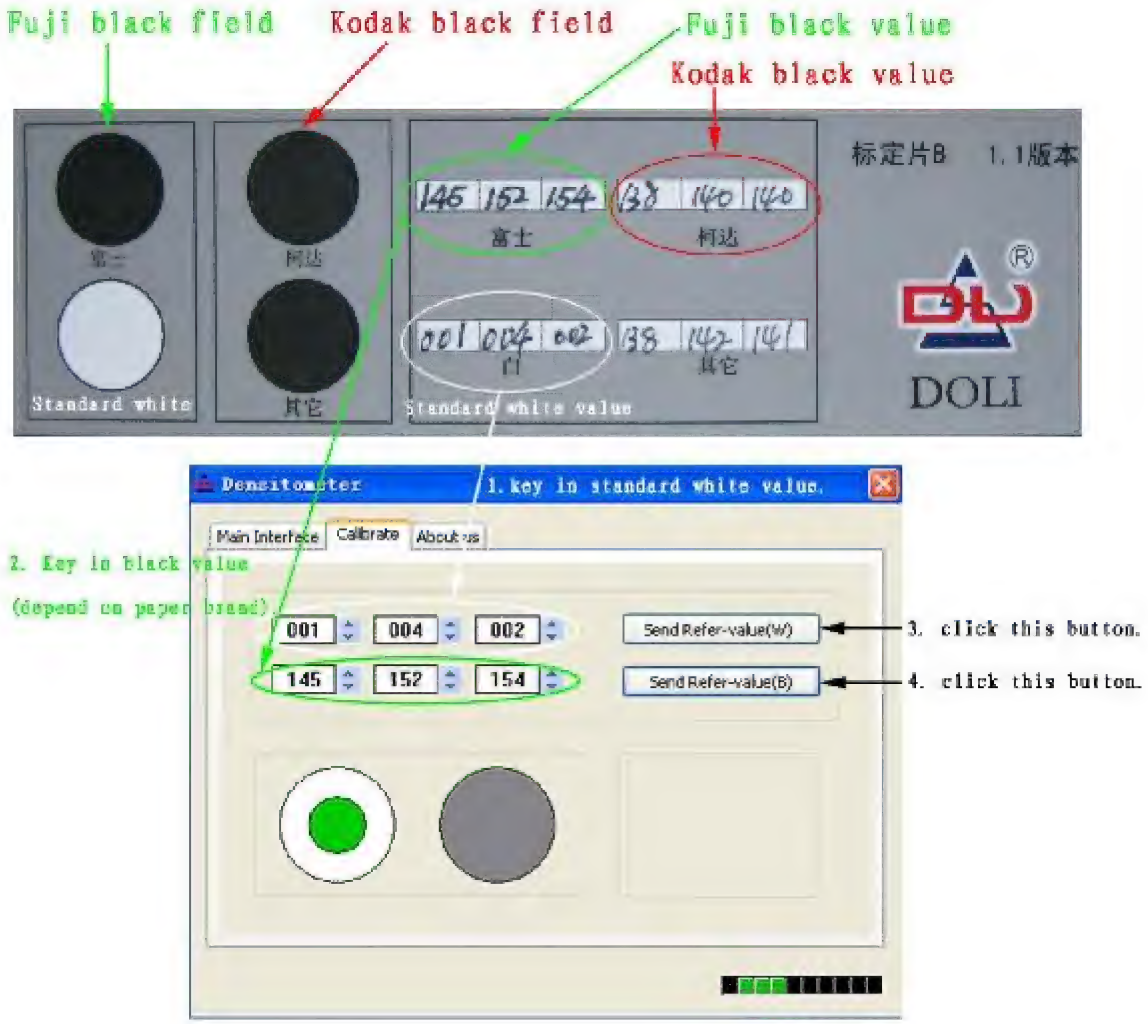
2. Open DL-202P User Interface (Usually in Windows PC E:\DL-1210\DL-202P densitometer or E:\DL-2300\DL-202P densitometer folder).

3. Click Open>>> and then select COM port number.



4. Select Calibrate tab.

5. Key in the standard white value and the black value depending on the used paper brand, and then click send refer-value(W) and send refer-value(B) to save to densitometer, for example, we are using Fiji paper, then the procedure as follow illustration:



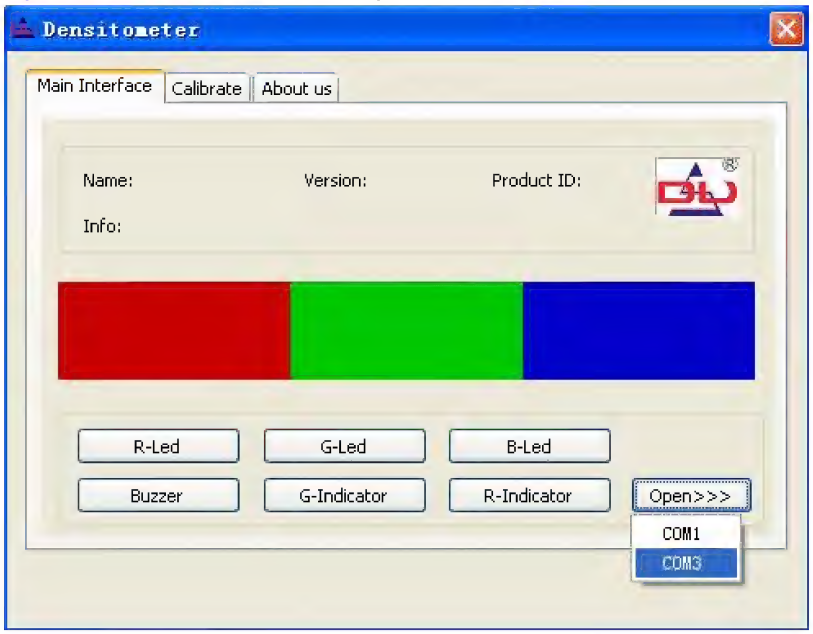
6. Position the densitometer on the calibration tablet standard white field, and then make measurement, don't release the densitometer until you hear "beep-beep" sound 3 times, until 3 times "beep-beep" release the densitometer.

7. Position the densitometer on the calibration tablet Black field depending on the paper brand used and makes measurement, release the densitometer after finish.

Now densitometer is calibrated.

Malfunction diagnosis

1. Open DL-202P User Interface (Usually in Windows PC E:\DL-1210\DL-202P densitometer or E:\DL-2300\DL-202P densitometer folder).
2. Click Open>>> and then select COM port number.



3. Now densitometer hardware can be tested as follow:

Button	Function
R-Led	Test densitometer red LED
G-Led	Test densitometer green LED
B-Led	Test densitometer blue LED
Buzzer	Test densitometer buzzer
G-Indicator	Test densitometer green indicator
R-Indicator	Test densitometer red indicator

3.2 Data backup and restore

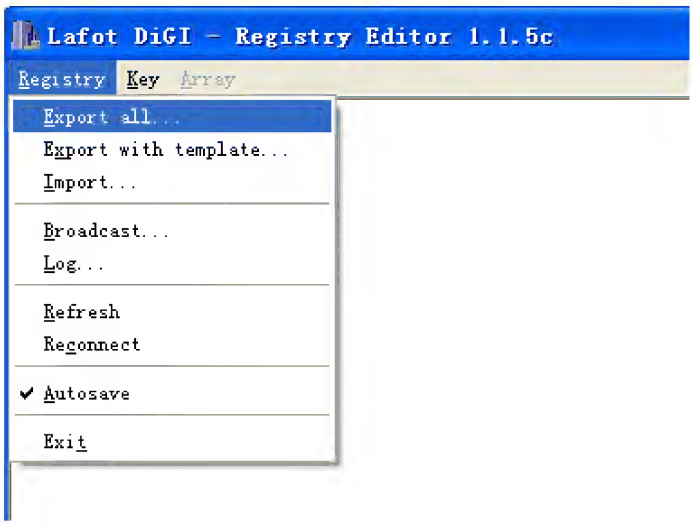
Purpose:

- To backup the calibration data to prevent unexpected data loss.
- To restore the calibration data in case unexpected data loss occur.

Backup data every time before and after a major calibration is performed.

Steps of data backup:

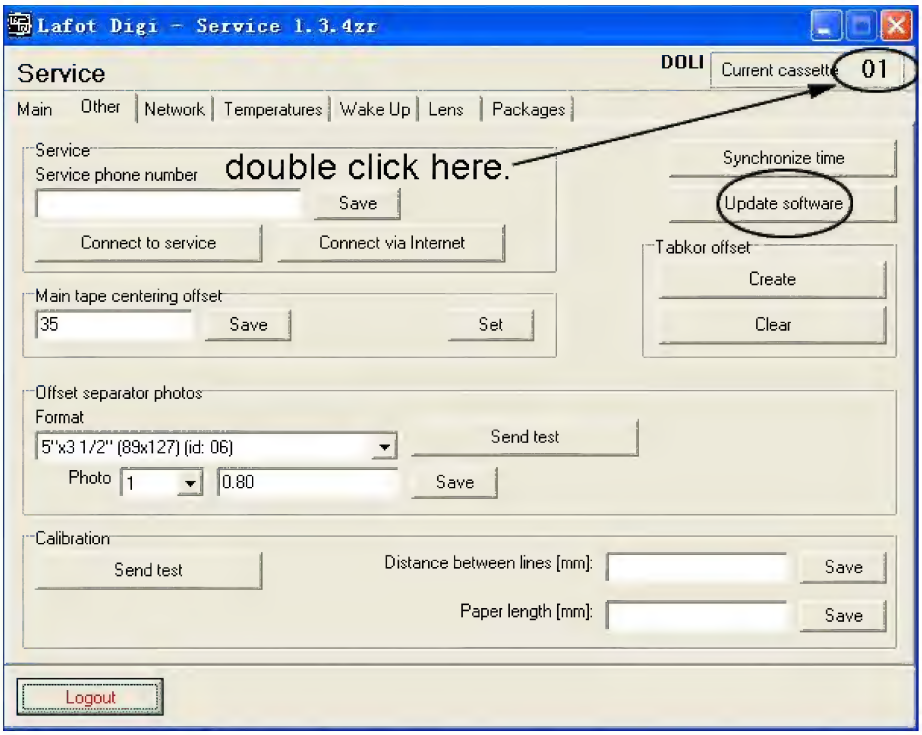
1. On DL-0810 machine Windows PC create a new folder, name **data backup**.
2. Backup Linux Registry.
   - On the DL-0810 machine Windows PC click **Start**.
   - Click **Run**.
   - Key in **\\10.1.1.1\win-software**, and then **enter**.
   - Run **Iregedit**.
   - On the left top of the window click **Registry**.
   - Click **Export all…**and then wait for a few seconds.



   - Specify **data backup** folder which you have just created, click **OK**.
3. Backup Mask files.
   - On DL-0810 machine Windows PC, click **Start**.
   - Key in **\\10.1.1.1\tables** and then **enter**.
   - Select all **.prn** files.
   - Copy and paste these files to **data backup** folder.

Steps of data restore:

1. Restore Linux Registry.
   - On DL-0810 machine Windows PC, click **Start**.
   - Click **Run**.
   - Key in **\\10.1.1.1\win-software**.
   - Run **Iregedit**.
   - On the left top of the window click **Registry**.
   - Click **Import…**.
   - Specify the data file which you have backed up in the **data backup** folder, click **Open**, and then wait a second.
2. Restore Mask files.
   - On the DL-0810 machine Windows PC, click **Start**.
   - Key in **\\10.1.1.1\tables** and then enter.
   - **Copy** and **paste** the Mask files which you have backed up in the **data backup** folder to **\\10.1.1.1\tables** folder.
3. Completion
   - Run **Maintenance**.
   - Click **Service**, and then on **Other** tab double click the cassette number:



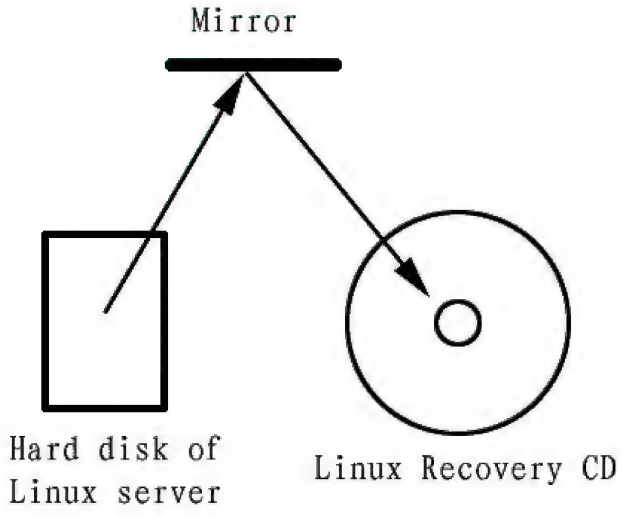
   - Click **Update software**, and then wait 5 minutes.

3.3 Linux system backup and recovery

Purpose:

- To make a whole Linux system backup by creating a Linux recover CD.
- To restore Linux system from Linux recovery CD.

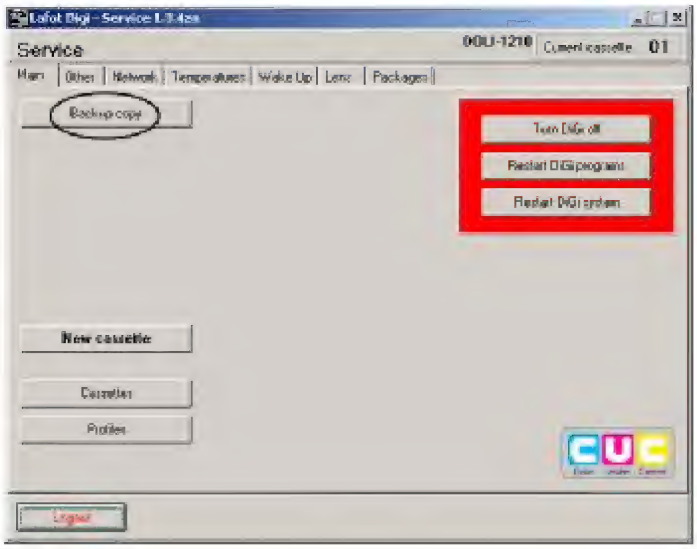
Linux recovery CD is an image of the hard disk of Linux PC. It includes all of the calibration data of the machine (Fig 3.4.1).



Precondition: **Nero** has been installed to the DL-0810 machine Windows computer.

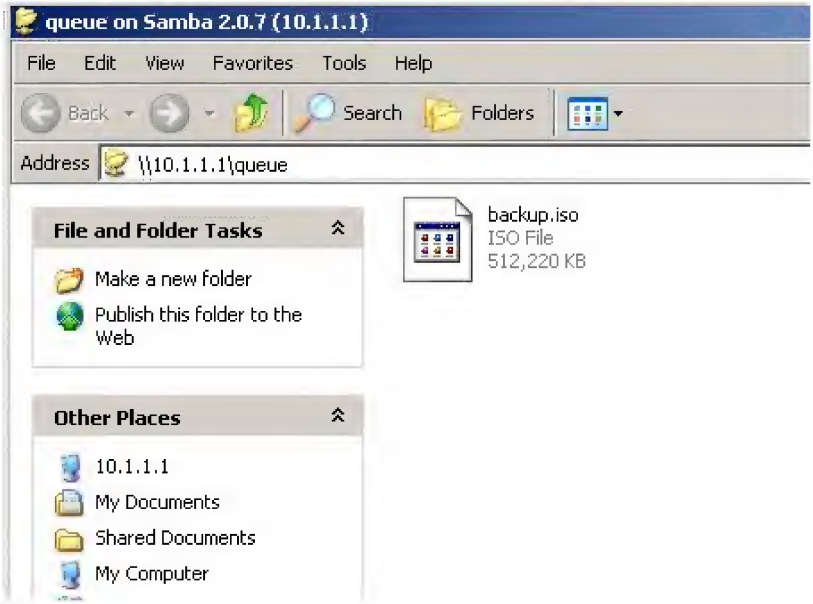
Steps of Linux system backup:

- Run **maintenance**.
- Click **Service**, and then under **Main** tab click **Backup copy** (Fig 3.4.2).

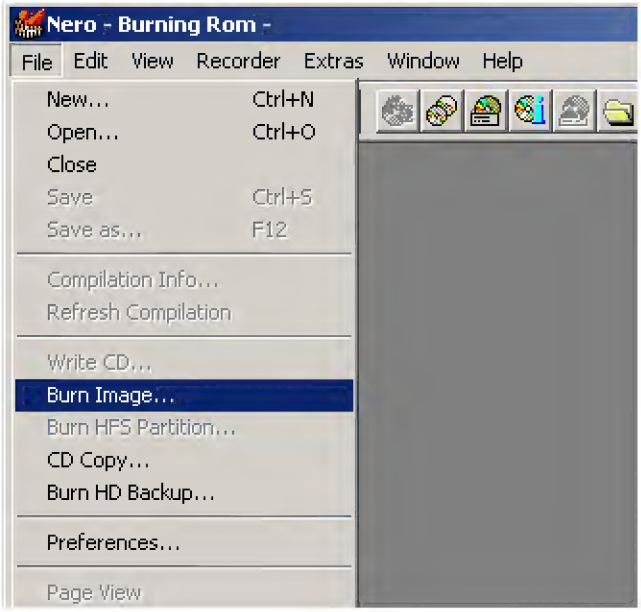


- Wait about 10 minutes; do not do anything to the machine.
- On the DL-0810 Windows PC, click **Start**.

- Click **Run**.
- Key in **\\10.1.1.1\queue** and then **enter**.
- Cut and paste the **backup.iso** file to Windows PC.



- Burn this file to a blank CD by **Burn image…** of **Nero**.



Steps of Linux system recovery:

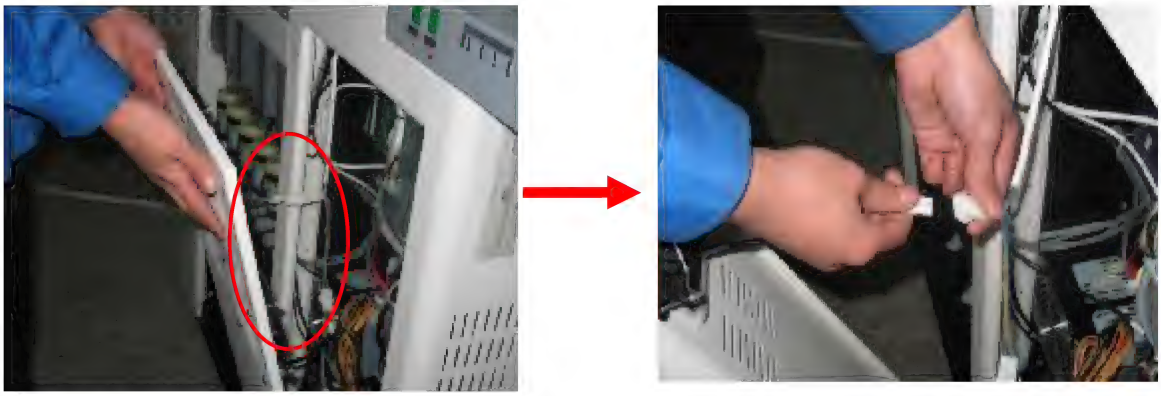
Precondition:

An external CD-Drive has been installed to Linux PC motherboard, and the BIOS of Linux has been set up.

Installation procedure is as follow:

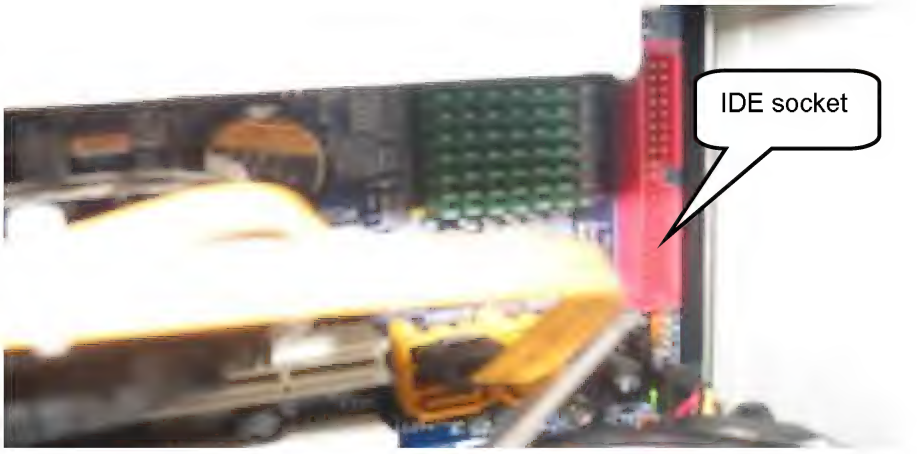
1. Shut down the machine, on the left side of the machine unscrew the fixation screws of the cover as the illustration below:

2. Unplug the 3 cooling fan power supply plugs (as the illustration below) then remove the cover.



3. Prepare the CD Drive and the flat cable for installation.

4. Plug the Terminal A of the flat cable to the Linux PC mother board red IDE socket.



5. Plug the terminal B of the flat cable into the CD Drive 40 pin socket.

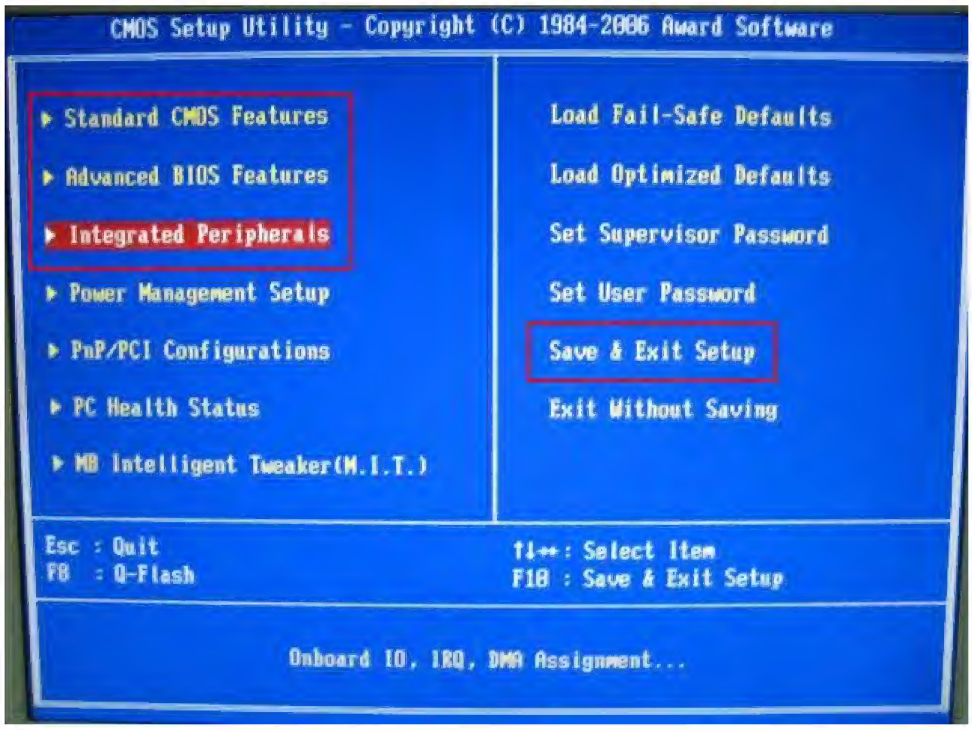
6. Plug the power supply plug into the CD Drive.

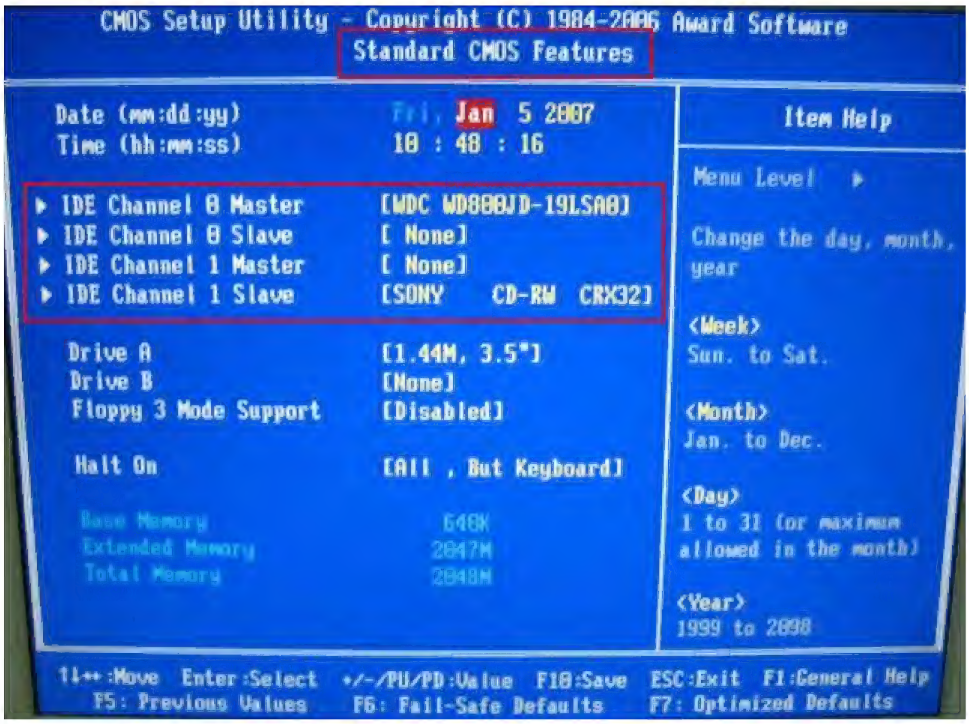
7. Now the external CD Drive has been installed, place the CD Drive properly.

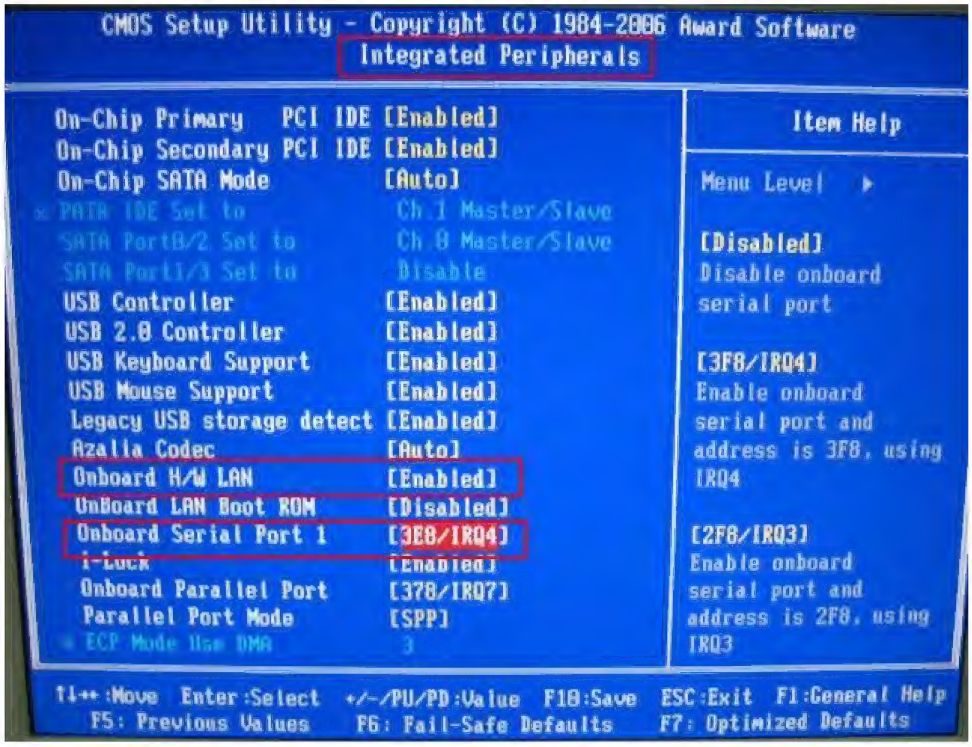
BIOS setup procedure after installation:

1. Shut down the machine, then attach a LCD monitor and a keyboard to the Linux motherboard.

2. Turn the Linux PC power on, on the keyboard press Delete key to enter BIOS interface (BIOS interfaces could be different depending on the motherboard model). Check the following options:





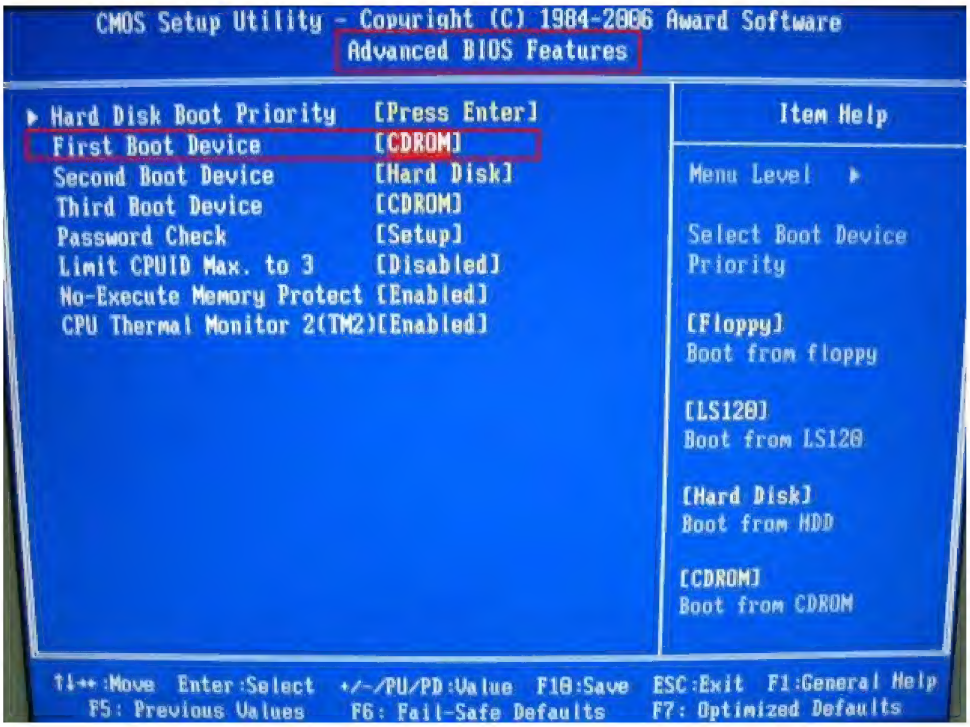


(If the Linux mother board only have COM port, it must be set as **3E8/IRQ4**;

If the Linux mother board have two COM port, it must be set as:

COM1: **2F8**

COM2: **3E8**)



Usually the **BIOS** of the Linux PC motherboard has been configured in the factory, only the **First Boot Device** shall be re-configured after installing the external CD-Drive.

Steps:

- Insert the Linux recovery CD to the CD-ROM of the Linux PC.
- Press the Linux PC power button to turn Linux PC off.
- Press the Linux PC power button again to turn Linux PC on.
- Wait about 10 minutes, the Linux system will be recovered automatically, at this time you can see the installation information on the Linux LCD Panel.
- Finally you may be requested to enter a serial number, just press OK button on the Linux LCD panel, and then wait till finish; If you see “Clean up” message, just wait 5 minutes then go to next step.
- Press the Linux PC power button to turn Linux PC off,
- Press the Linux PC power button again to turn Linux PC on, and then eject the Linux Recovery CD immediately (otherwise the Linux system will be recovered again).

3.4 Integration with Pakon scanner

A series of Pakon film scanner such as F-135, F-235, F-335 etc. can be integrated to **Istudio** for sending scanned images to **Istudio** automatically after scanning.

Purpose: Integrate the **PSI-X35** to **Istudio**.

Precondition:

Pakon scanner has been setup.

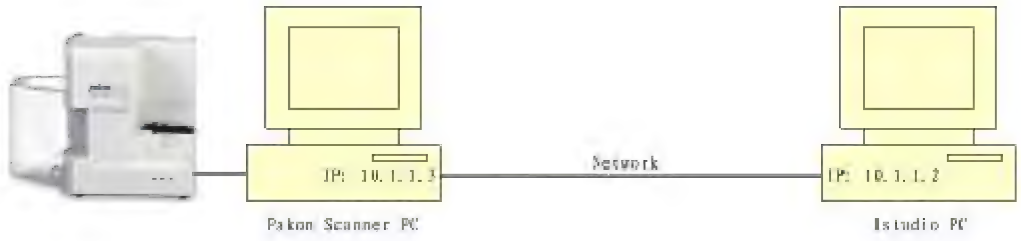
The network between Pakon scanner PC and the **Istudio** PC has been setup.

Refer to the related manual for setup Pakon scanner to PC.

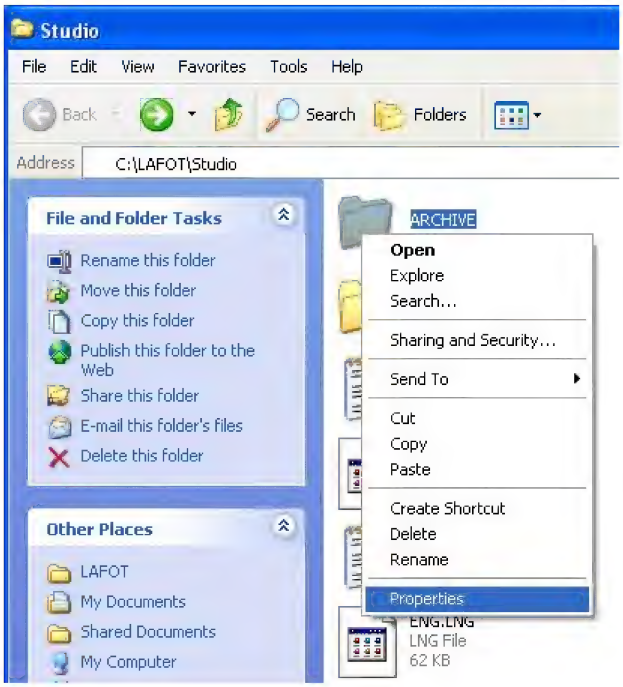
Steps:

For example, **Istudio** has been installed on the hard disk **C:\LAFOT\Studio** of the PC which IP address is **10.1.1.2**.

1. Share the **Archive** folder of **Istudio** on the network.



- In **Istudio** PC **C:\LAFOT\Studio** highlight the **ARCHIVE** folder and then right click mouse select **properties**.

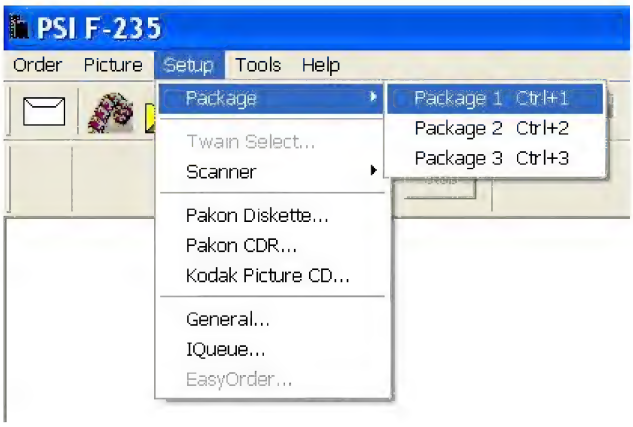


➢ Configure Network sharing and security as the illustration below:

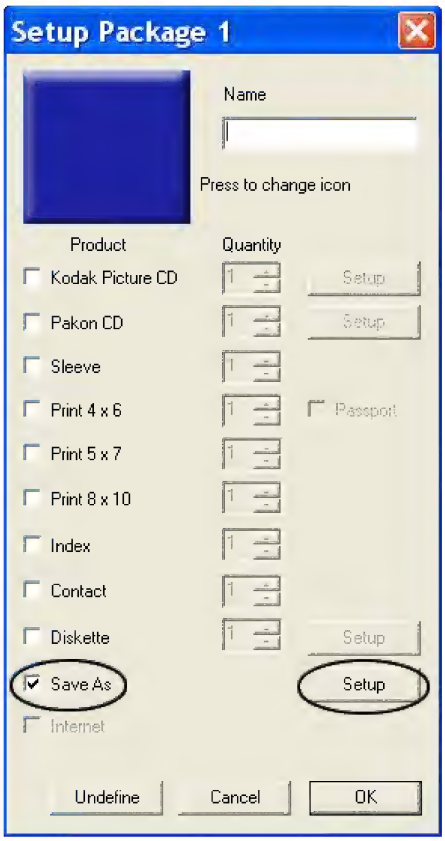
2. Customize the **Package 1** of **PSI-X35**.

➢ Run **PSI-X35** on the Pakon scanner PC.

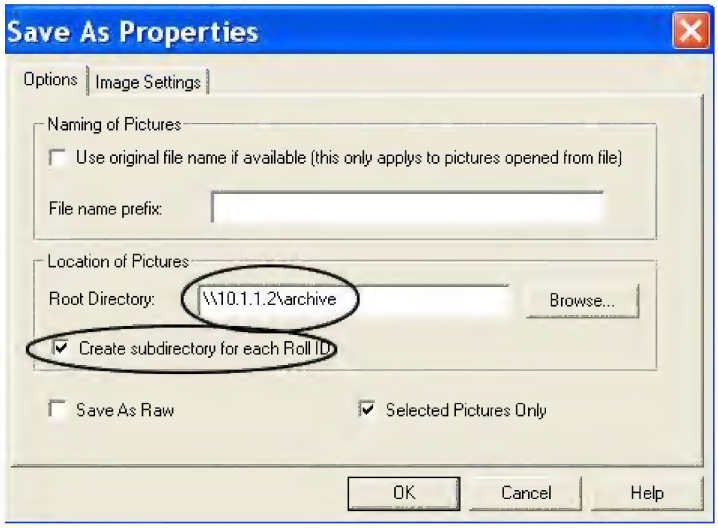
➢ Select **Setup** and then point to **Package** and then select **Package 1 Ctrl+1**.



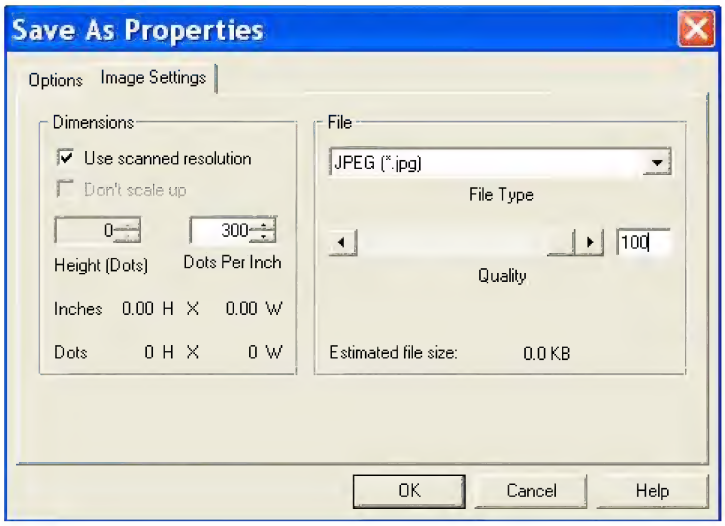
➢ Select **Save As** only and then click **Setup**.



➢ In **Root Directory** type **\\10.1.1.2\archive** and select **Create subdirectory for each Roll ID**.

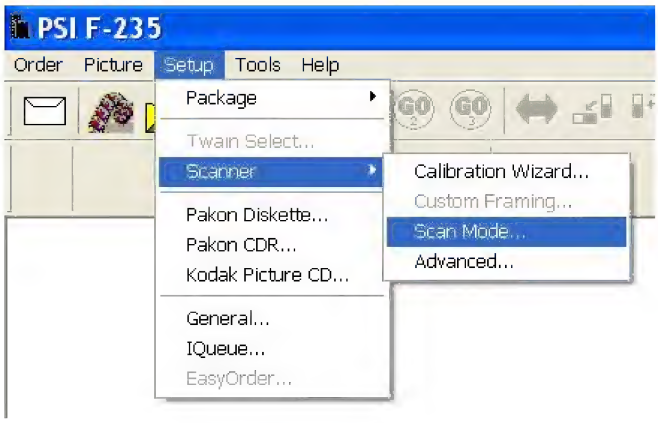


➢ Under **Image Settings** tab select **JPEG** for **File**, and **100** for **Quality**, and then click **OK**.

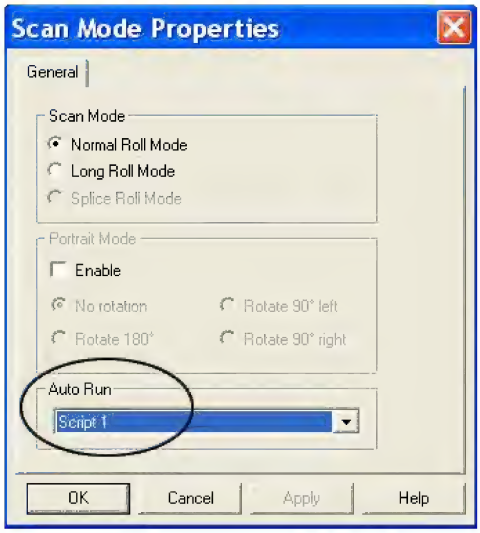


3. Configured **Auto Run** of **PSI-X35**.

➢ Click **Setup** and then point to **Scanner** and then select **Scan Mode…**.



➢ In **Auto Run** select **Script 1** and then click **OK**.

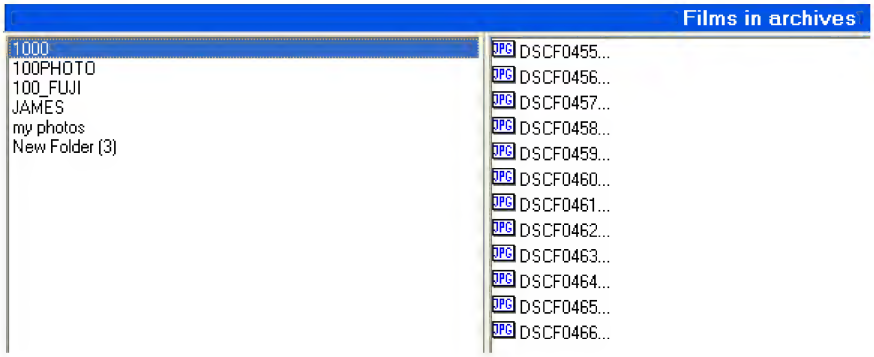


Working flow from film to photos:

1. Insert a film to the Pakon scanner **PSI-X35,** and scan the film..
2. After finishing the scan in **Istudio** click **ARCHIVE** icon to open **ARCHIVE** folder.

3. Select the Roll ID of the film which you have scanned, and then click **Open**.

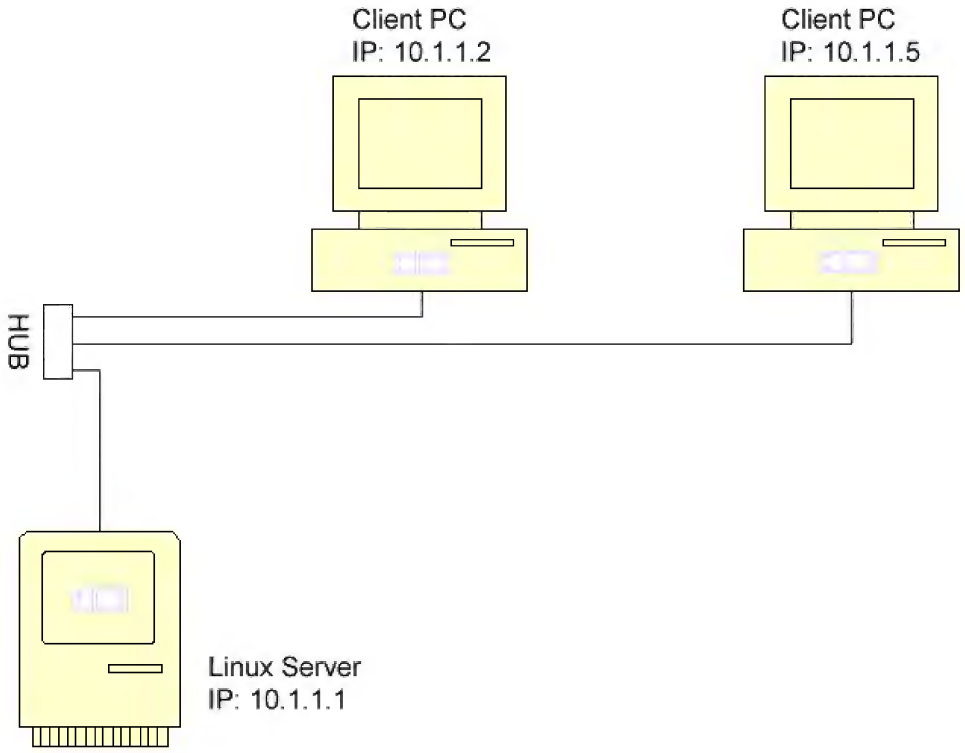
Usually you need to wait a little bit until the scan image exporting finishes.


Films in archives
1000
100PHOTO
100_FUJI
JAMES
my photos
New Folder (3)
DSCF0455...
DSCF0456...
DSCF0457...
DSCF0458...
DSCF0459...
DSCF0460...
DSCF0461...
DSCF0462...
DSCF0463...
DSCF0464...
DSCF0465...
DSCF0466...

4. Print.

3.5 Client PC setup

DL-0810 is a network printer. User can connect up to 253 clients PC to the Linux PC via network.



Istudio is the only software which can send orders to the Linux PC for printing.

To setup **Istudio** on each PC, a dongle (eg. license) is needed.

The computers talk to each other by TCP/IP protocol on the network.

The IP address of the Linux PC is 10.1.1.1, and it is fixed and can not be changed; the IP address of client PC can be configured by user.

Purpose: To configure a new PC connected to DL-0810 machine for printing.

Precondition:

- The network card has been setup on the new PC;
- The new PC has been connected to the HUB via network cable.

Things required:

- A dongle for Istudio

 The dongle for **Istudio** and the dongle for Linux PC are different and can not be exchanged.

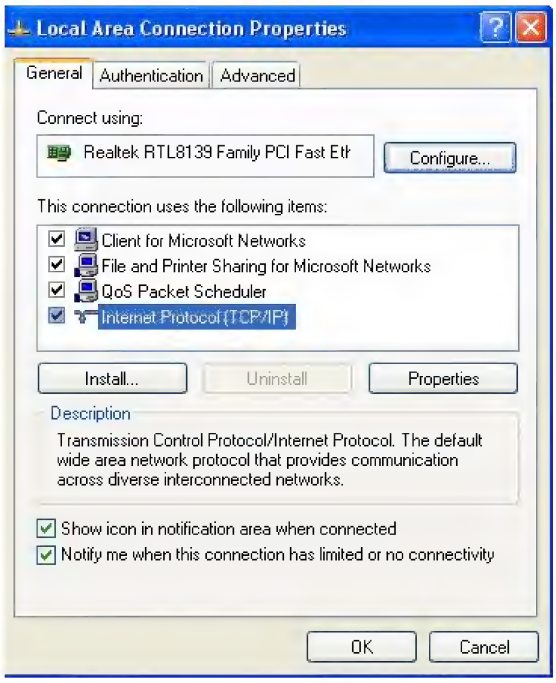
- Dongle driver
- Istudio setup program

  - The dongle driver program **HASP-64** and the **Istudio** setup program **LS2_4_53** can be found in the **DL-0810** folder of the DL-0810 machine Windows PC hard disk.
  - The name of the dongle driver setup program could not be **HASP-64, and** the name of **Istudio** setup program could be not **LS2_4_53** as the technical upgrade. Ask the service people for the latest information.

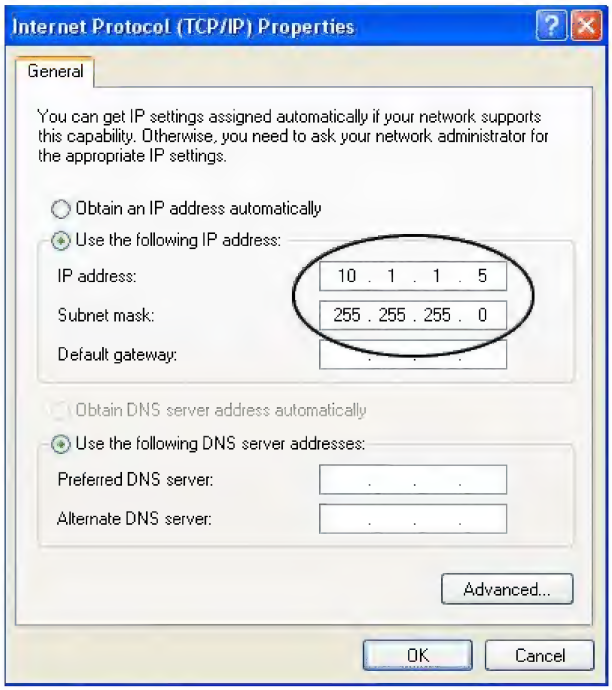
- A spare USB2.0 port of the new PC motherboard.

Steps:

1. Configure IP address for a new PC.
   - On the new PC, click **Start** and point to **settings,** then open **Control panel**.
   - Open **Network connections**。
   - Highlight **Local Area Connection**, and right click mouse,,then select **Properties**.
   - Highlight **Internet Protocol (TCP/IP)** and click **Properties**.



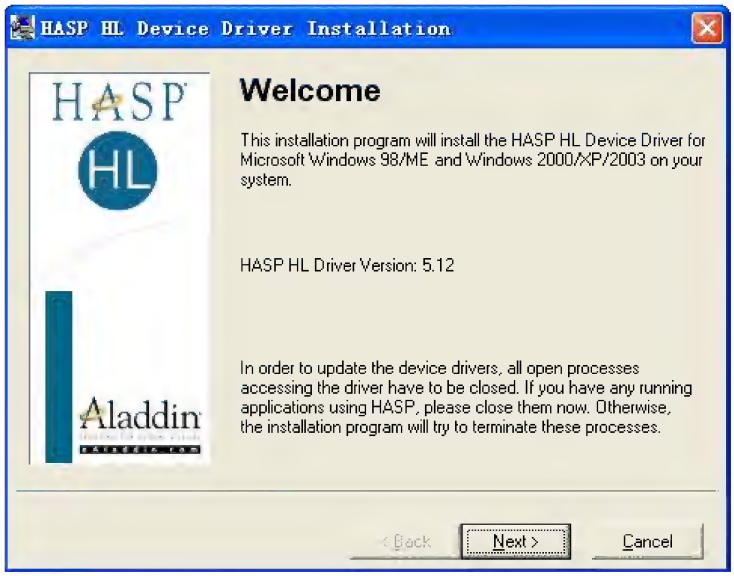
➢ Select **Use the following IP address:,** set the IP address and the Subnet mask as the illustration below:



➢ Click **OK**.

2. Insert dongle to USB2.0 port of the motherboard.

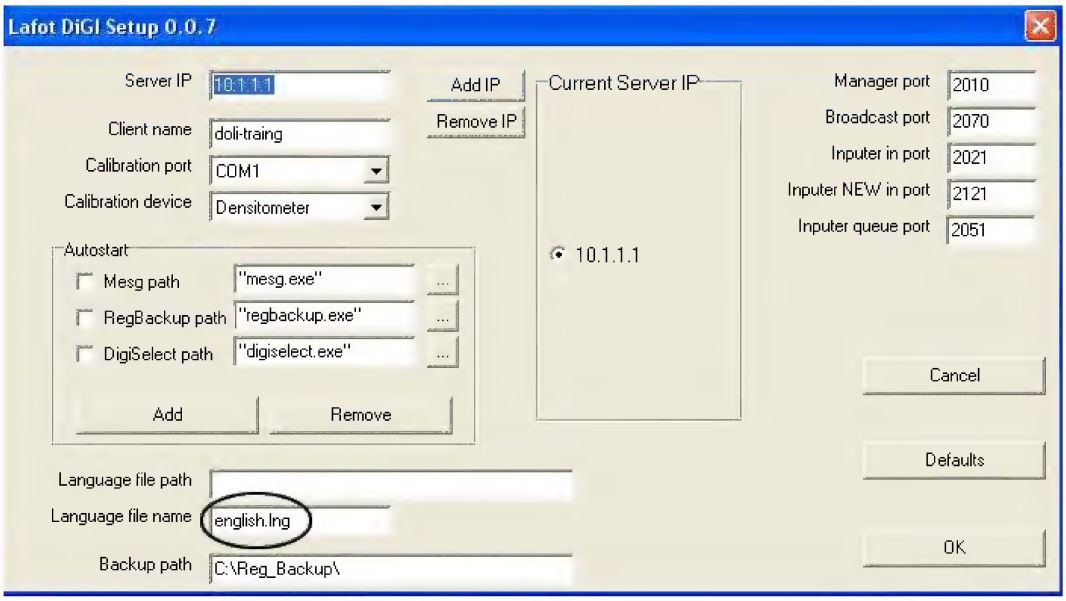
3. Run **HASP-64** to install driver for the dongle.



4. Run **LS2_4_53** to Install **Istudio** on the new PC.

5. Set language file name for the new PC.

   - On the new PC click **Start** and then **Run**.
   - Key in **\\10.1.1.1\win-software** and then enter.
   - Run **Config**.
   - Set **Language file name** to **english.lng**.


Lafot DiGI Setup 0.0.7
Server IP
10.1.1.1
Add IP
Remove IP
Current Server IP
10.1.1.1
Client name
doli-traing
Calibration port
COM1
Calibration device
Densitometer
Manager port
2010
Broadcast port
2070
Inputer in port
2021
Inputer NEW in port
2121
Inputer queue port
2051
Autostart
Mesg path
"mesg.exe"
RegBackup path
"regbackup.exe"
DigiSelect path
"digiselect.exe"
Add
Remove
Cancel
Defaults
Language file path
Language file name
english.lng
Backup path
C:\Reg_Backup\
OK

➢ Click **OK**.

3.6 Unilateral valve of replenishing pump cleaning and replacement

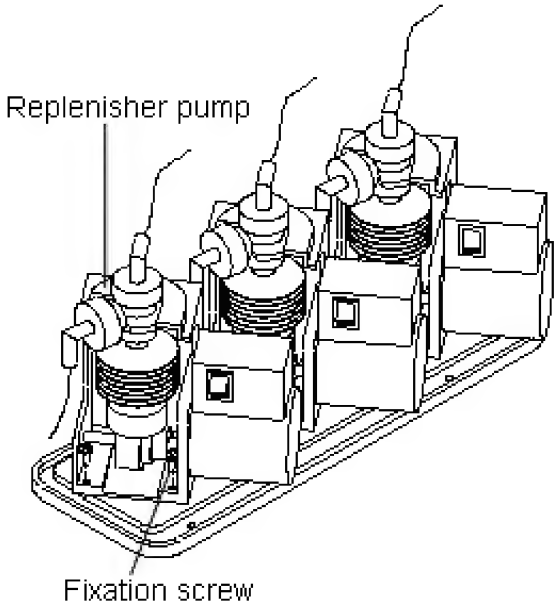
Purpose: To clean or replace a unilateral valve of a replenishing pump.

Tools required: Screw driver, container, protection glove.

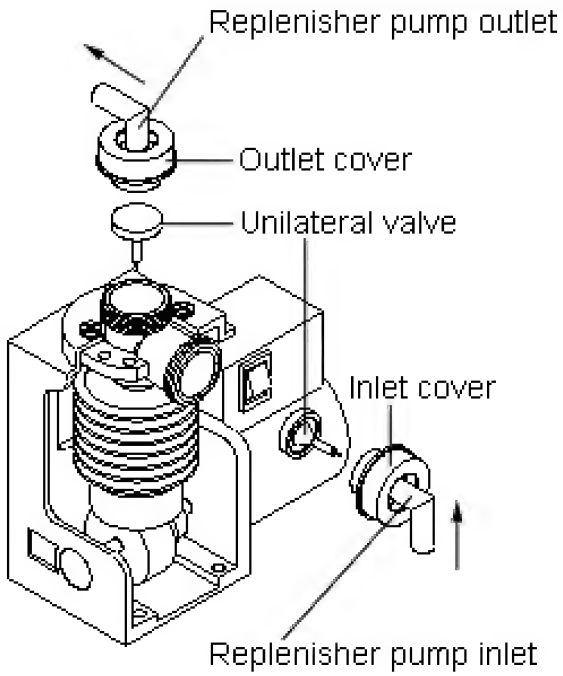
- To prevent chemical running over when cleaning or replacing a unilateral valve, use a container to contain the chemical during operation.
- Ware protection gloves during the operation to avoid chemical contact to your hands.

Steps:

1. Remove machine back cover.
2. Remove the 3 fixation screws of the replenishing pump, and take out the replenishing pump from the machine.



3. Tweak out the cover of the replenishing pump, remove the inlet element and outlet element (be care, chemical will run out).



4. Take out the unilateral valves and wash or replace them.
5. Restore the inlet and outlet cover to the replenishing pump, make sure it is tight.

   Make sure the unilateral valve has been installed to the correct direction.
6. Screw down 3 the fixation screws to restore the replenishing pump to the machine.
7. Restore the back cover.

3.7 Filter cleaning and replacement

Purpose: To clean or replace filters of working tank and to keep the chemical clean.

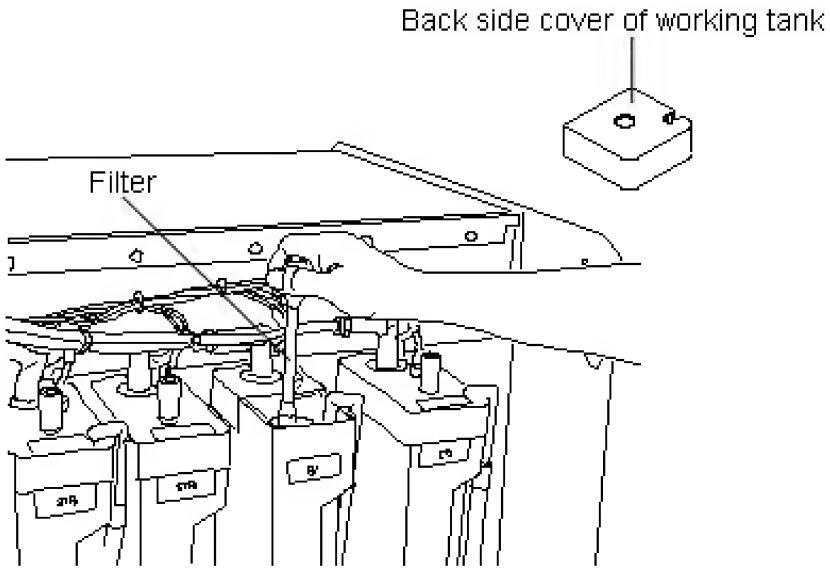
- Dirty chemical can produce dirty photos.
- Replace filter if necessary.

Tools required: Container.

Put a filter unit onto a container immediately after removing the filter from working tank to prevent chemical splattering.

Steps:

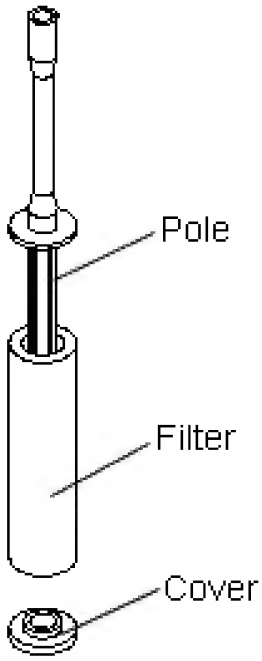
1. Take off the backside cover of a working tank, and take out the filter unit carefully.



2. Clean the filter units bwith water or replace the filters.

   To Replace a filter:

   - Remove cover, and remove the filter from the pole.
   - Clean the filter pole with water.
   - Install a new filter to the pole.
   - Restore the cover.



3. Restore the filter unit to the working tank.
4. Restore the left side cover.

3.8 Rack sleeve replacement

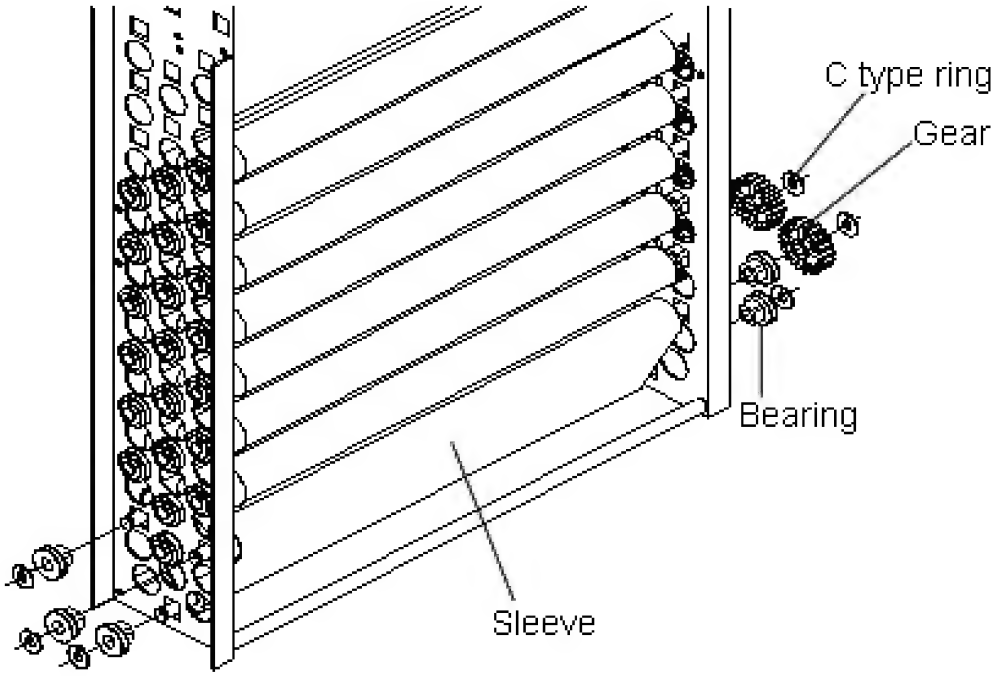
Purpose: To replace the sleeve of the rack.

The sleeve shall be replaced if it is damaged or ***Tran mutative*** or corrupted, or soiled heavily. Otherwise it could cause paper overlapping or paper jam.

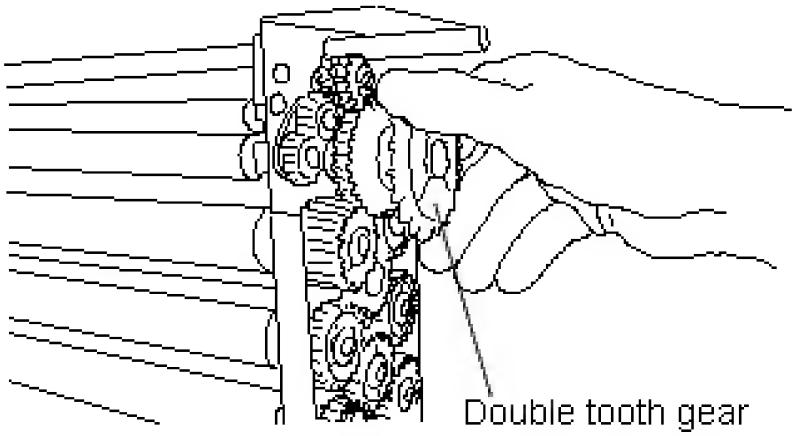
Tools required: Pliers, protection cushion.

Steps:

1. Remove racks from working tank.
2. Remove C type rings, gears and bearings on both sides of the rollers which are included inside the sleeve.



3. Remove the 3 rollers which are included inside the sleeve from the rack, and then remove the sleeve.
4. Replace the sleeve.
5. Reassemble the 3 rollers into the rack.
6. Restore bearings.
7. Restore gears.
8. Restore C type rings.
9. Turn the double tooth gear anticlockwise to make sure the sleeve runs well.



10. Restore rack to machine.

3.9 Rack cleaning and examination

Purpose: To check and clean racks to prevent paper scratching,jamming, and paper edge damage.

Tools required: Protection cushion, fluff brush, cotton cloth.

Steps:

1. Take out rack from working tank.
2. Clean rack with a fluffy brush and water to remove residuals from roller and gears.

   When cleaning, rotate the double tooth gear to turn the rollers so that rack could be cleaned thoroughly.
3. Clean sleeve wth a fluffy brush and water.
4. Clean the cross overs with a cotton cloth and water.

   Don't use brush to clean the cross over, the surface of the cross over is very smooth, it could be damaged by brush or other hard objects that will cause paper scratch.
5. Check the following parts to be OK.
   - Springs
   - Rollers
   - Gears
   - C type rings
   - Sleeve
6. Restore the rack and the cross-over to machine.

3.10 Check and clean working tanks and pipes

Purpose:

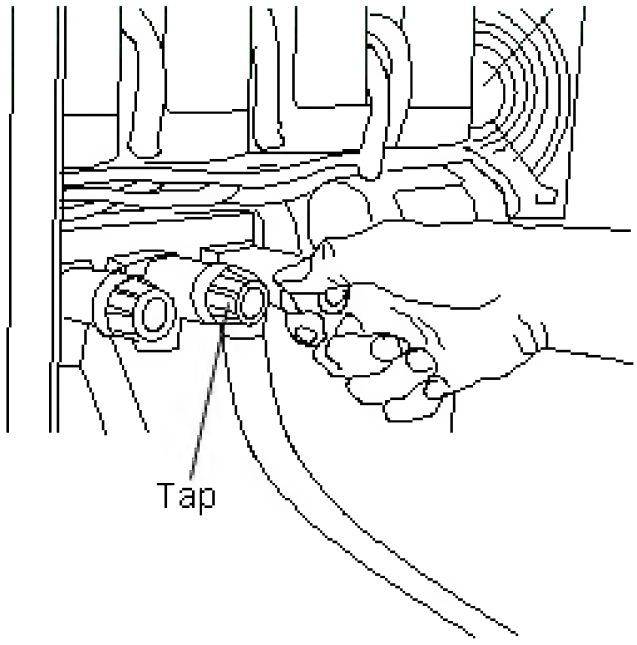
- To check working tanks and pipes in order to prevent potential chemical leaking.
- To clean working tank in order to keep chemical clean.

For convenience, this check can be performed while replacing chemical.

Tools required: Protection cushion.

Steps:

1. Connect a water pipe to the tap, place the other end of the pipe to a container and turn the tap counter-clockwise to drain off chemical.



2. Remove racks from working tank.
3. Check all connectors of the pipes, which must be sealed reliably.
4. Clean all working tanks using a fluff brush and water to remove residuals and stains.
5. Add water to working tanks until level is OK and power on the machine to start circulations for about 15 minutes, drain water. Repeat 1-3 times.
6. Restore everythings to the machine.

3.11 Exposure platform disassembly

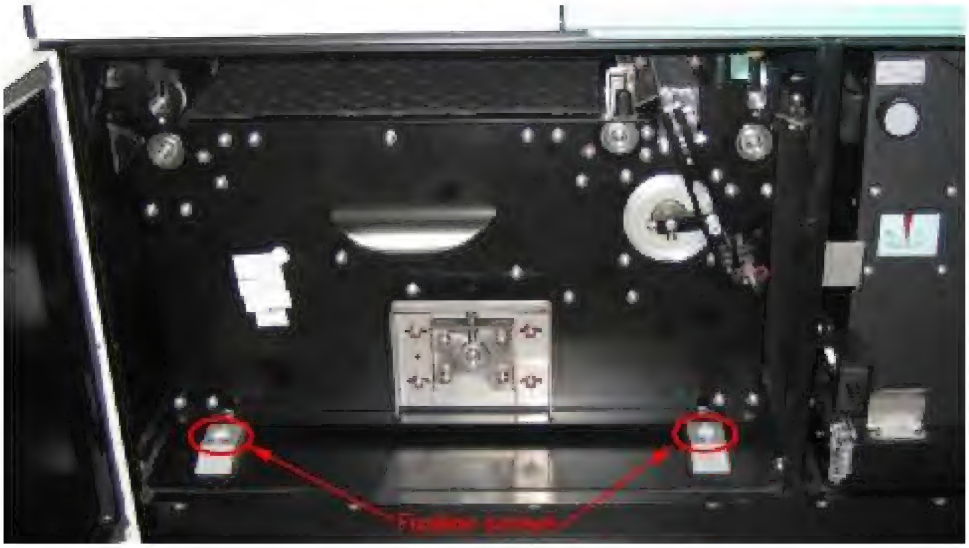
Precondition:

- Paper has been rewind to paper magazine.
- Machine has been shut down.

Tools required: Cross screw driver

Steps:

1. Open printer door.
2. Remove the 2 fixation screws of the exposure platform.



3. Pull out the exposure platform by hand.

3.12 Raiser rack 1 disassembly

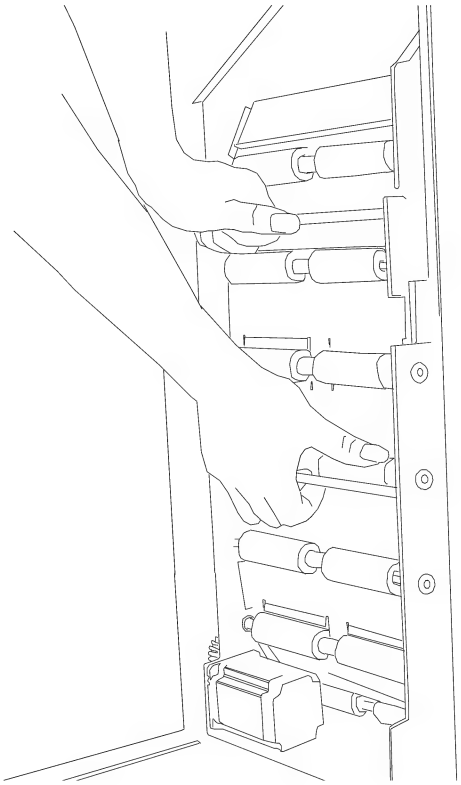
Precondition: Machine has been shut down.

Steps:

1. Open the printer front door.

2. Remove the 2 fixation screws of raiser rack 1.

3. Carefully and horizontally pull the raiser rack 1 out.



3.13 Raiser rack 2 disassembly

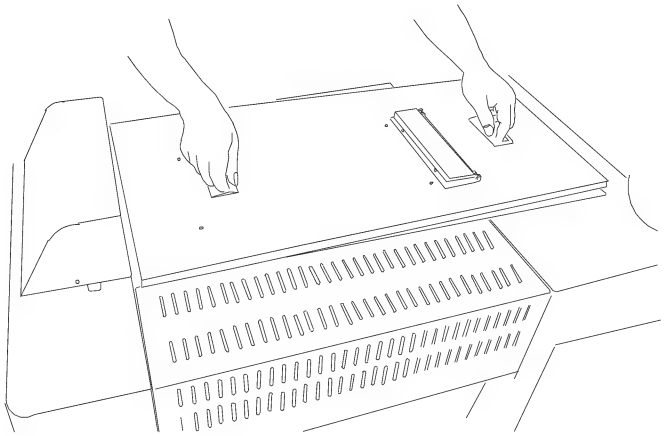
Precondition: Machine has been shut down.

Steps:

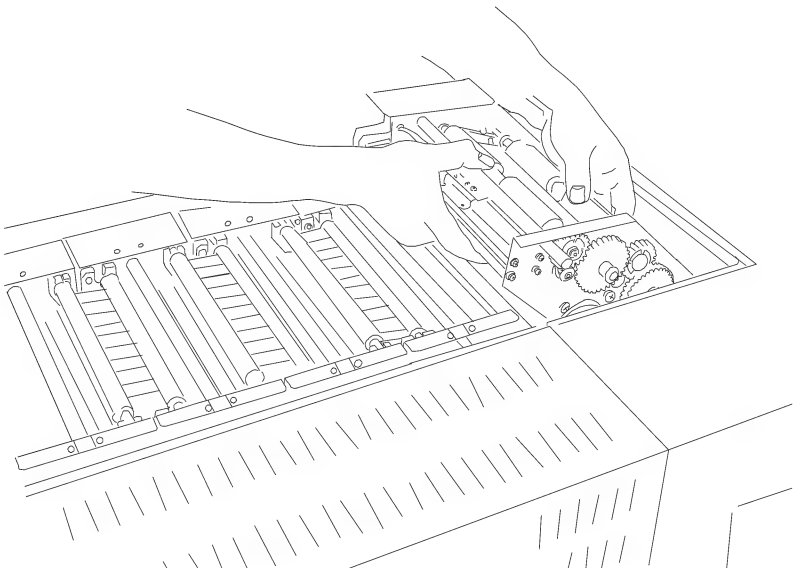
4. Open the printer front door.

5. Unplug the raiser rack 2 plug.

6. Open the printer cover.



7. Slowly lift up the raiser rack 2.



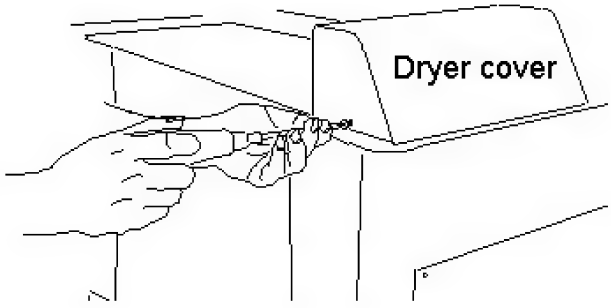
3.14 Dryer rack disassembly

Precondition: Machine has been shut down.

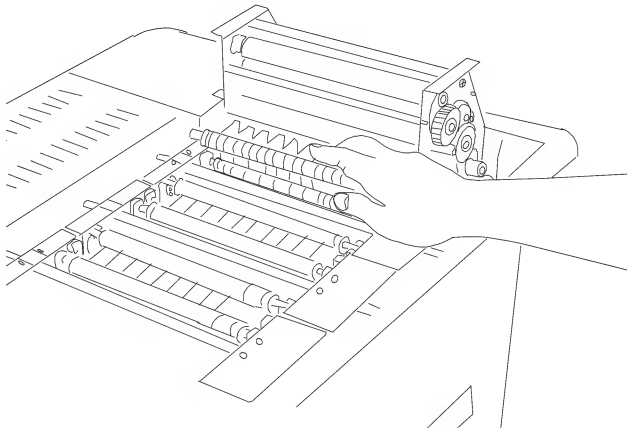
Tools required: Cross screw driver

Steps:

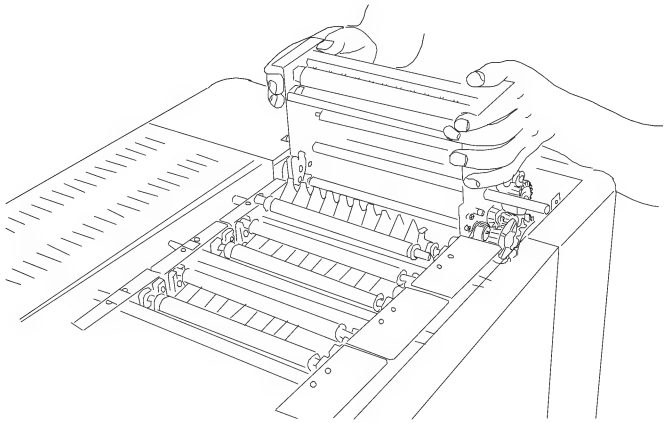
1. Remove the 2 fixation screws of dryer cover then remove the dryer cover.



2. Remove the printer cover, then remove the STB3 cross over.



3. Carefully lift up the dryer rack.



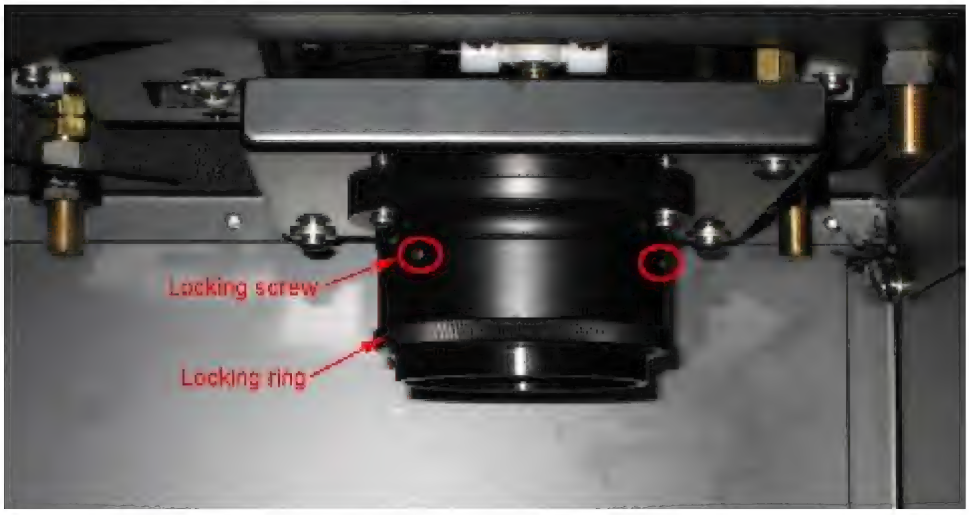
3.15 Lens focus adjustment

Purpose: To adjust lens focus.

Tools required: Ellen key (could be found in the accessories of the machine), tapes.

Steps:

1. Open the printer door, loose the locking ring of the Lens.



2. For each Lens there are 3 screws for locking the focus, unscrew the 3 screws by Ellen key.
3. Paste tape on the Lens below and above the locking ring, close the printer door and send test print in **Istudio**.
4. Open the printer door, rotate the Lens at small increment and make test print again.

   Make ring around test prints as the table below:

Test prints #	Angle of the Lens rotated
0	0°
1	30° anticlockwise
2	30° clockwise
3	60° anticlockwise
4	60° clockwise
5	90° anticlockwise
6	90° clockwise

   After the test prints comes out, mark the test prints immediately.
5. Pick up the best test print.
6. Turn the Lens to the corresponding angle of the best test print.
7. Screw down the 3 locking screws of the Lens and tighten the locking ring.

3.16 Skew adjustment

Purpose: Adjust exposure head to correct angle of which the exposure image is parallel with paper.

Tools required: Cross screw driver

Steps:

1. Open the door of exposure head.
2. There a 4 fixation screws (A) which fix the exposure head, and there 2 screws (B) which lock the exposure head angle; loose all these 6 screws.

3. Now exposure head can be rotated, try to rotate different angle and print test photo in **Istudio**, until happy.
4. Screw down all these 6 screws.

If you only loose screw A without loosing screw B, then take out the exposure head from the machine and put it back, the exposure head angle will not change.

obtain the information about the regulations in force about the handling and correct disposal of chemistry from the country's authorities in charge.

1.4 Storage

The chemicals should be stored and prepared according to the manufacture's information and advice.

All Color papers must always be stored in a cool and dry place.

The best storage temperature is between 2℃ and 10℃.

Opened packages have to be stored at a relative humidity of 20-60%.

Storage at 20℃ over several days is possible without problems.

Storage temperatures above 30℃ should be avoided because they will cause visible alterations after only a few days.

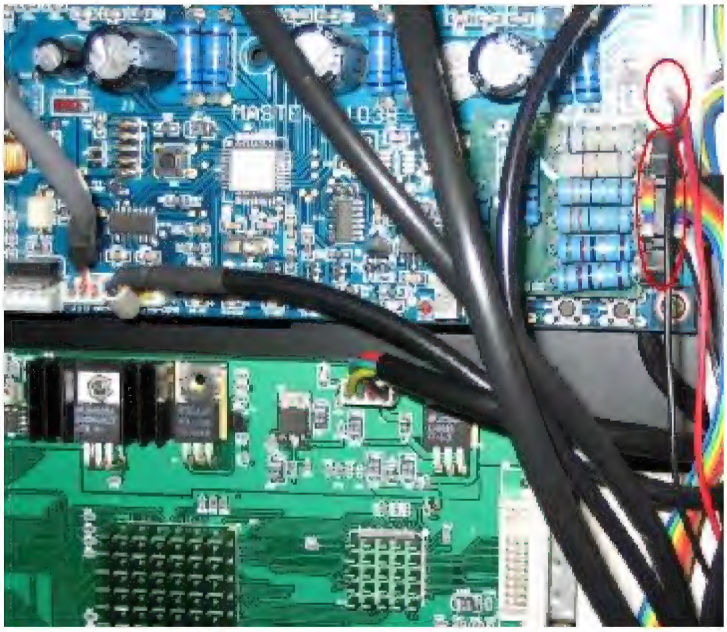
3.18 LED assembly replacement

Precondition: The machine has been shut down.

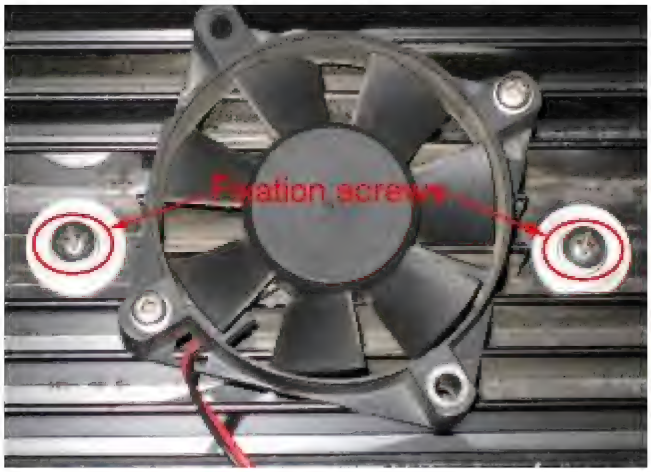
Tools required: Short screw driver

Steps:

1. On the Master-D103B PCB unplug the J4 and the J6 plug.



2. Open the door of exposure head, then on the LED assembly remove the 2 fixation screws.



3. Replace the LED assembly.
4. Screw down the 2 fixation screws of the LED and plug in the J4 and J6 plugs to the Master PCB.

5. Redo morning test for all paper magazines.


2.1 Morning setup

6. Redo Uniformity Mask calibration.


2.6 Uniformity calibration

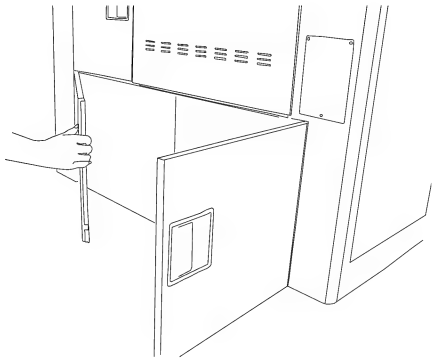
3.19 Paper jam in cutter operation

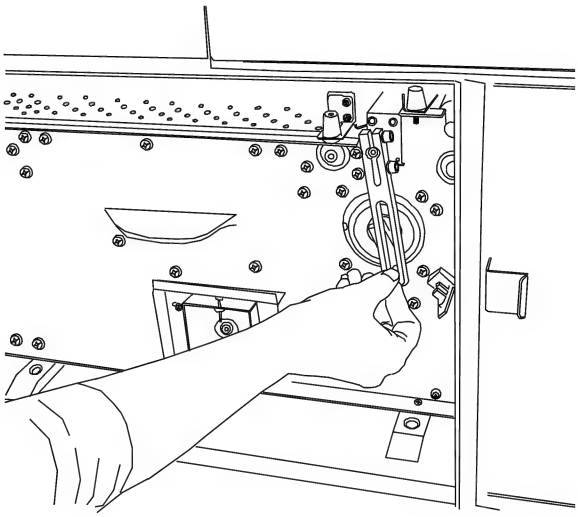
Purpose: To remove the paper piece which has jammed inside the cutter

Tools required: Cross screw driver

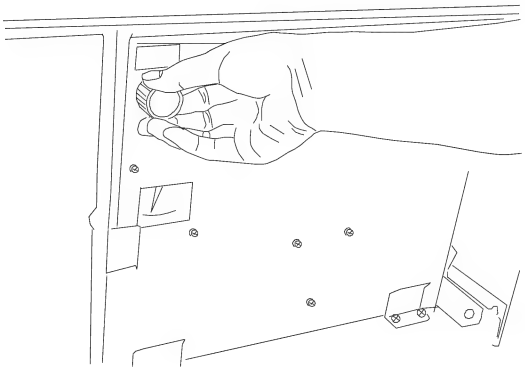
Steps:

1. On the small yellow Linux LCD panel unwind paper then shut down the machine.
2. Open the exposure platform door, then manually turn the cutter 360° to cut off the paper (make sure the machine has been shut down before you turn the cutter!).





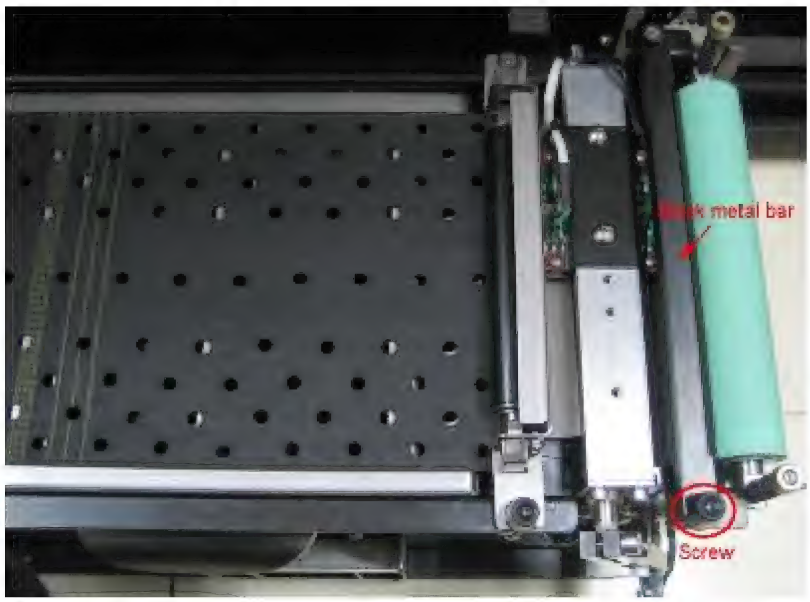
3. Turn the paper magazine knob anticlockwise to unwind paper into paper magazine.



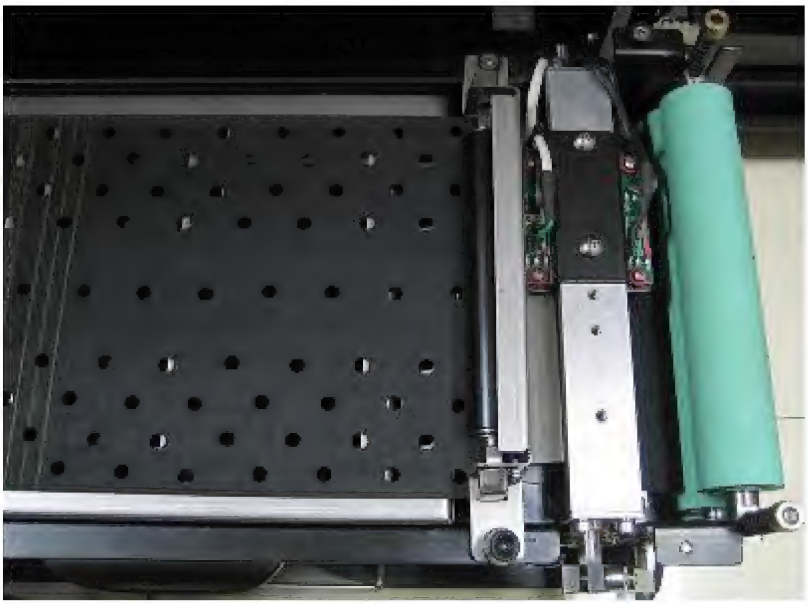
4. Remove exposure platform from the machine.

3.11 Exposure platform disassembly

5. Remove the screw, then remove the black metal bar by hand.



6. Now paper piece can be removed easily.



7. Restore the black metal bar and the screw, then restore exposure platform to the machine.

3.20 Cutter adjustment

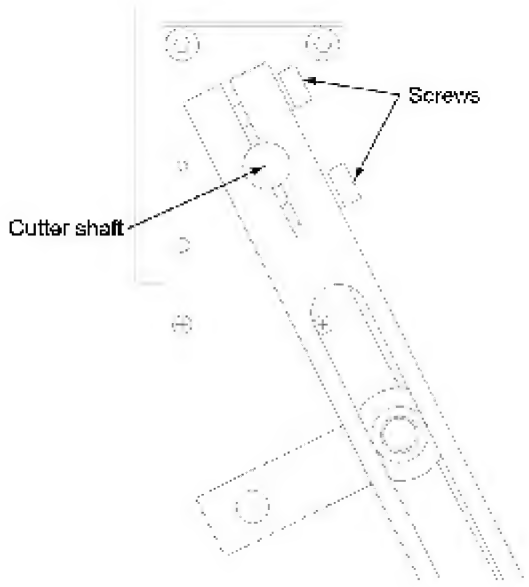
Purpose: to adjust the cutter to the correct angle in factory

Tools required: Cross screw driver, ellen key(can be found in accessories of the machine)

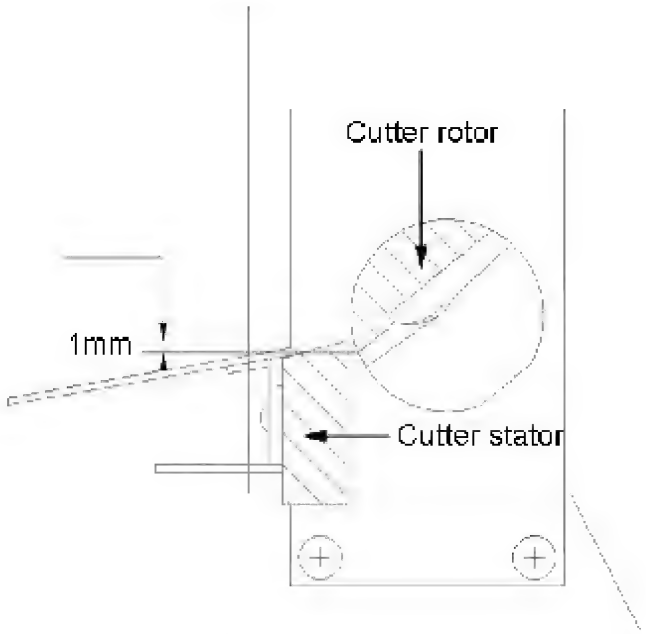
The cutter of DL-0810 is self-sharpening design and durable, last 5 years time, usually no need to change or adjust by user. The information of this section only indicate the method of how to adjust the angle of the cutter in factory.

Steps:

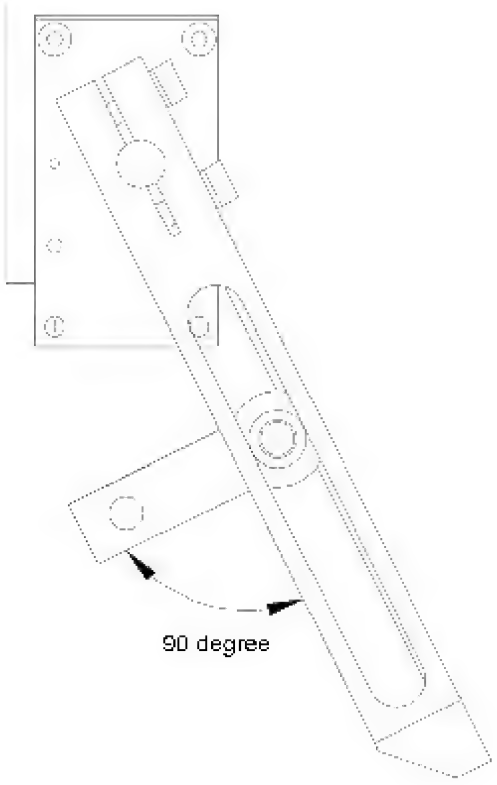
1. Remove the exposure platform from the machine.
2. Loose the 2 screws.



3. Rotate the cutter shaft by hand, until the rotor and the stator of the cutter overlap about 1mm.



4. Rotate the rocker by hand, when the angle is 90 degree screw down the 2 screws.



4

Chapter 4 Electrical parts and wiring diagram

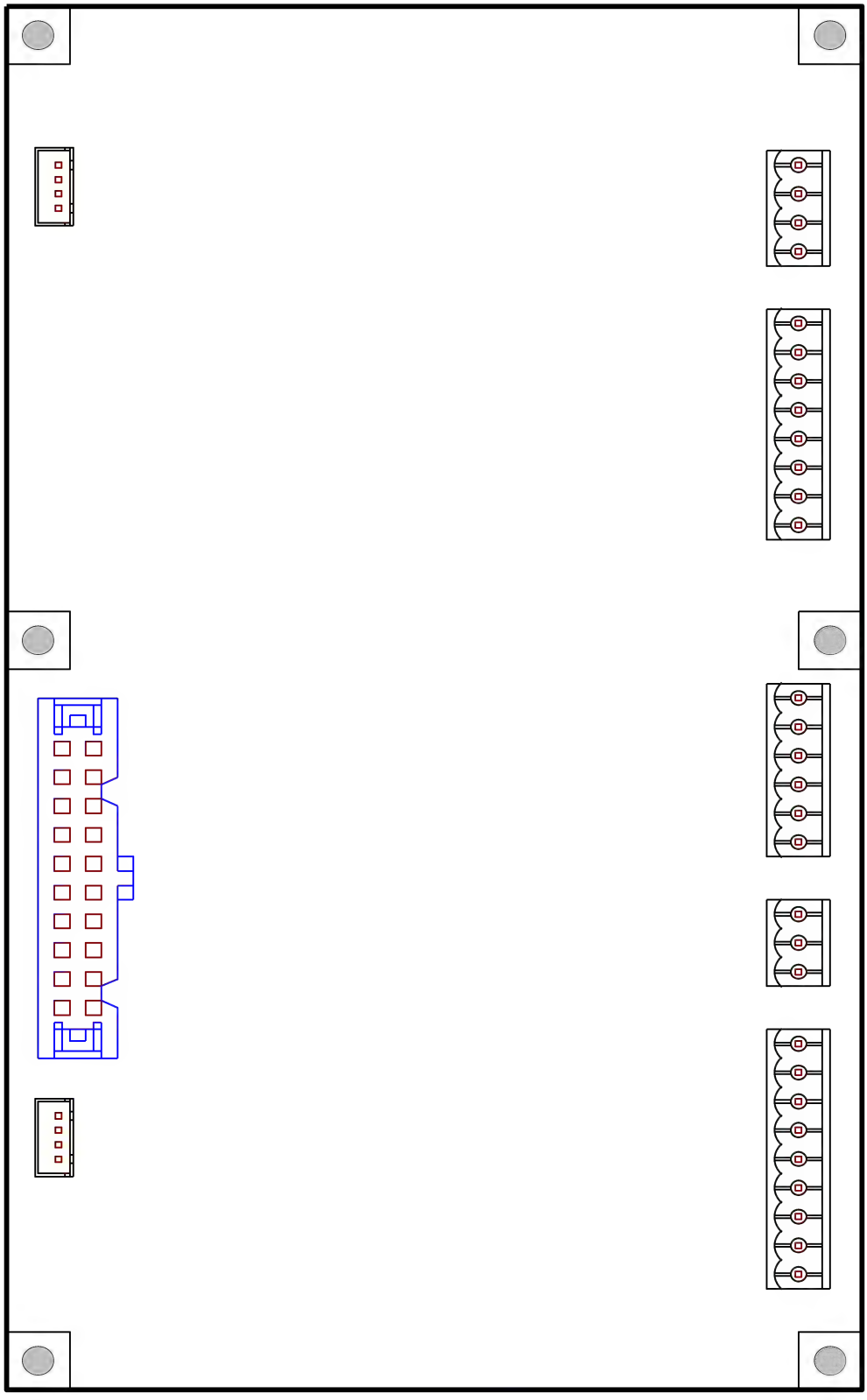
This chapter describes the sensors and PCBs used in this machine and the wiring diagram.

Prologue

Take sometime to read the manual and study the machine until you understand everything well before you perform the service.

Ask somebody for help if you are not confident with the things you are going to do to avoid serious problems.

4.1 ACControl-D101 PCB



Functions

- Supply power to components that use AC 220V such as main processing motor, fans, heaters, circulation pumps, replenishing pumps, control AC Contactor ON/OFF.

Adjustment for replacement

None

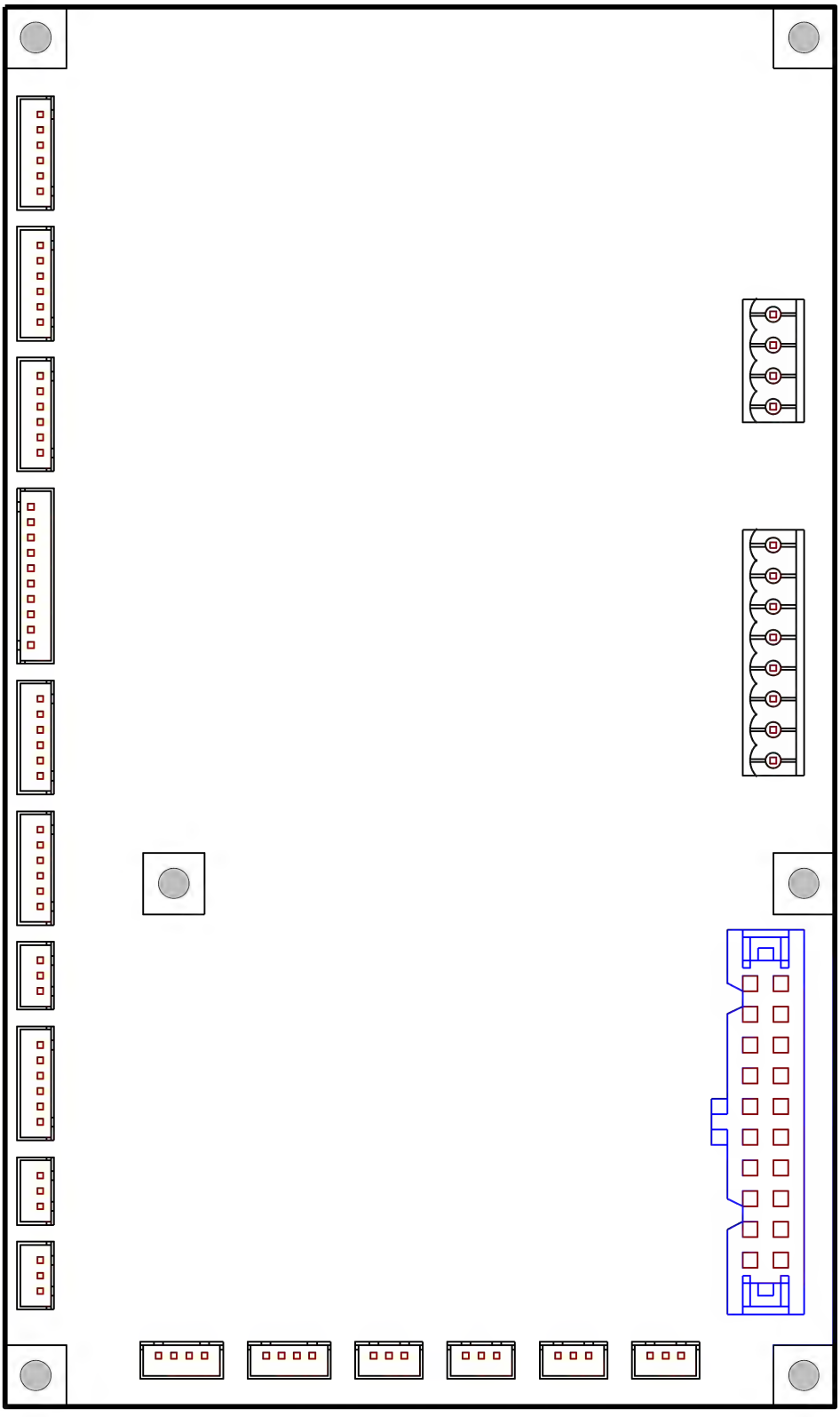
Disposition and description

Socket code	SN	Wire definition	Description
J1	1	STBSUP	STB replenisher pump control signal
	2	BFSUP	BF replenisher pump control signal
	3	CDSUP	CD replenisher pump control signal
	4	STB3PUMP	STB3 circulation pump control signal
	5	STB2PUMP	STB2 circulation pump control signal
	6	STB1PIMP	STB1 circulation pump control signal
	7	BFPUMP	BF circulation pump control signal
	8	CDPUMP	CD circulation pump control signal
	9	CABC	Sprinkling pump control signal
	10	SORT-AC1	Standby
	11	WASHS	Paper processor motor control signal
	12	CDFANS	
	13	STDHS	
	14	STB3HS	STB3 heater control signal
	15	STB2HS	STB2 heater control signal
	16	STB1HS	STB1 heater control signal
	17	BFHS	BF heater control signal
	18	CDHS	CD heater control signal
	19	DRYHS	Dryer heater control signal
	20	+5V	+5V power supply
J2	1	220V	AC220V Live wire
	2	CD-P	CD circulation pump

Socket code	SN	Wire definition	Description
	3	BF-P	BF circulation pump
	4	STB1-P	STB1 circulation pump
	5	STB2-P	STB2 circulation pump
	6	STB3-P	STB3 circulation pump
	7	CD-S	CD replenisher pump
	8	BF-S	BF replenisher pump
	9	STB-S	STB replenisher pump
J3	1	+5V	Standby
	2		
	3	DRYHS	
	4		
J4	1	220VIN	AC 220V live wire
	2		
	3	DRY	Dryer heater
	4		
J5	1	220V	AC220V Live wire
	2	CDH	CD heater
	3	BFH	BF heater
	4	STB1H	STB1 heater
	5	STB2H	STB2 heater
	6	STB3H	STB3 heater
	7		
	8	220V	AC 220V Live wire
J6	1	220V	AC 220V Live wire
	2	FAN	Standby
	3	WASH	Paper processor motor
	4	SORT1	Standby
	5	CABC	Sprinkling pump

Socket code	SN	Wire definition	Description
	6	ATX	
J7	1	RELAY-	AC Contactor control signal -
	2	RELAY+	AC Contactor control signal +
	3	ATX-	
	4	ATX+	
J8	1	ACIN	AC 220V live wire
	2		
	3	ACOUT	AC contactor control loop

4.2 WashControl-D106 PCB



Functions

- Receive temperature signal of working tanks and dryer from temperature sensors.
- Receive level signal of working tanks, replenisher tanks and waste tanks from level sensors.
- Receive signal of sorter sensors.
- Control temperatures of working tanks.

Adjustment for replacement

- Set DIP switch to be the same as the previous board.

#	Factory default setting
1	OFF
2	OFF
3	OFF
4	OFF
5	OFF
6	OFF
7	OFF
8	ON

- Re-adjust trimmers for temperature calibration.

2.4 Temperature calibration

Disposition and description

Socket code	SN	Wire definition	Description
J1	1	AC24 V1	AC 24V Power supply
	2	AC24 V1	
	3	AC24 V2	
	4	AC24 V2	
J2	1		Serial port, to Linux PC
	2		
	3		
	4		
J3	1		Standby
	2		

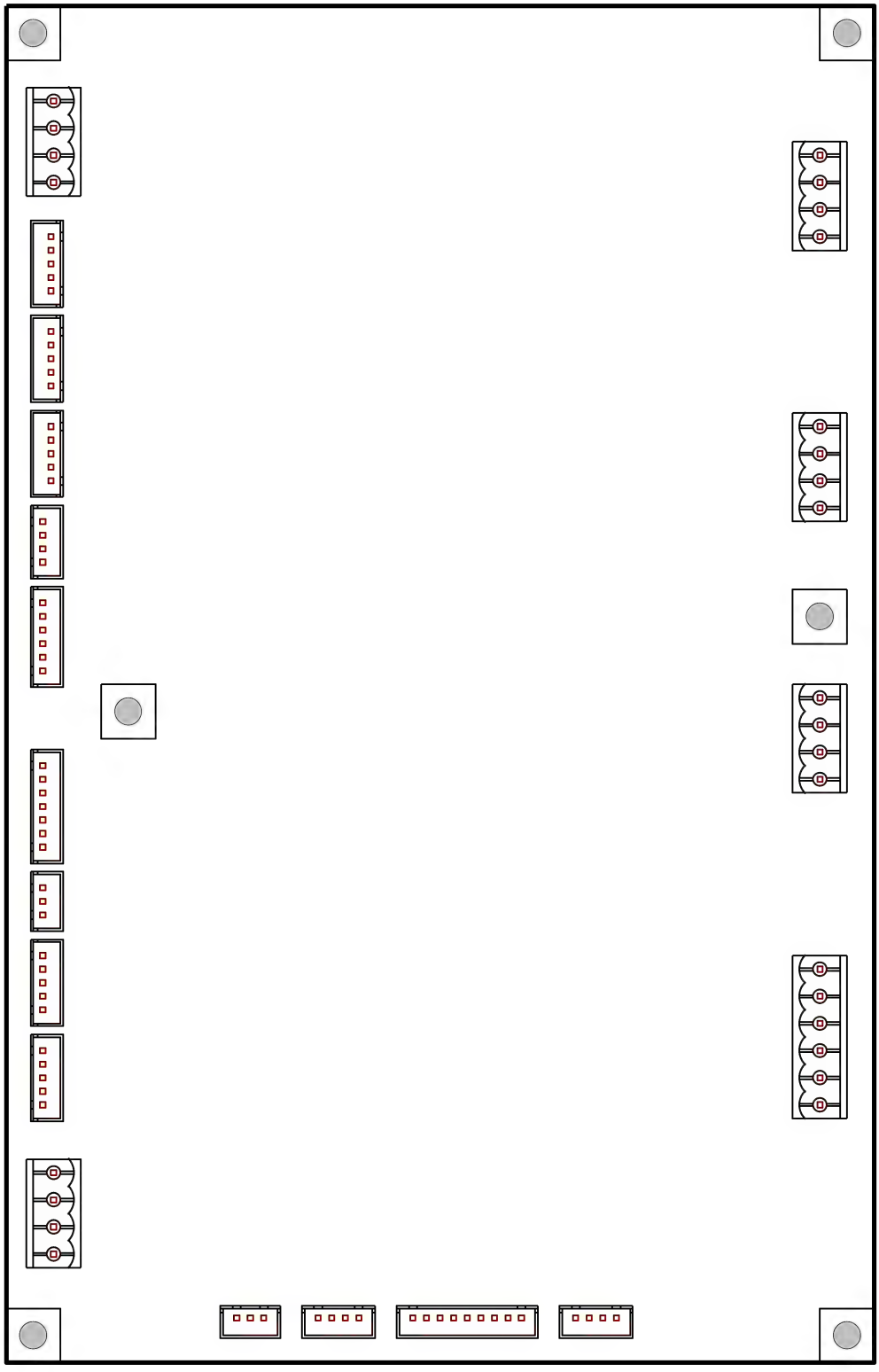
Socket code	SN	Wire definition	Description
	3		
J4	1		Serial port, to Platformctrl PCB
	2		
	3		
J5	1		Serial port, to Powerctrl PCB
	2		
	3		
J6	1	+5V	Standby
	2	WPL	
	3	GND	
J7	1	GND	Standby
	2	SRHC	
	3	SRHA	
	4	GND	
	5	SR1C	
	6	SR1A	
J8	1		Standby
	2		
	3		
J9	1	GND	Standby
	2	SR2C	
	3	SR2A	
J10	1	GND	Standby
	2	STDC	
	3	STDA	
J12	1		Serial port, to Master PCB
	2		
J12	3		

Socket code	SN	Wire definition	Description
	4		
J13	1	STBSUP	STB replenisher pump control signal
	2	BFSUP	BF replenisher pump control signal
	3	CDSUP	CD replenisher pump control signal
	4	STB3 PUMP	STB3 circulation pump control signal
	5	STB2 PUMP	STB2 circulation pump control signal
	6	STB1 PUMP	STB1 circulation pump control signal
	7	BFPUMP	BF circulation pump control signal
	8	CDPUMP	CD circulation pump control signal
	9	CABC	Sprinkling pump control signal
	10	SORT-AC1	Standby
	11	WASHS	Paper processor motor control signal
	12	CDFANS	
	13	STDHS	
	14	STB3HS	STB3 heater control signal
	15	STB2HS	STB2 heater control signal
	16	STB1HS	STB1 heater control signal
	17	BFHS	BF heater control signal
	18	CDHS	CD heater control signal
	19	DRYHS	Dryer heater control signal
	20	+5V	+5V Power supply
J14	1	GND	BF temperature sensor shield
	2	BFT	BF temperature sensor signal
	3	+5V	BF temperature sensor +5V
	4	GND	CD temperature sensor shield
	5	CDT	CD temperature sensor signal
	6	+5V	CD temperature sensor +5V
J15	1	GND	STB2 temperature sensor shield

Socket code	SN	Wire definition	Description
	2	STB2T	STB2 temperature sensor signal
	3	+5V	STB2 temperature sensor +5V
	4	GND	STB1 temperature sensor shield
	5	STB1T	STB1 temperature sensor signal
	6	+5V	STB1 temperature sensor +5V
J16	1	GND	Dryer temperature sensor shield
	2	DRYT	Dryer temperature sensor signal
	3	+5V	Dryer temperature sensor +5V
	4	GND	STB3 temperature sensor shield
J16	5	STB3T	STB3 temperature sensor signal
	6	+5V	STB3 temperature sensor +5V
J19	1	PACB	Standby
	2	PACA	
	3	SR2B	Photo receiver motor
	4	SR2A	
	5	SR1B	Standby
	6	SR1A	
	7	STBB	
	8	STBA	
J20	1	LSTB3	STB3 level sensor signal
	2	GND	STB3 level sensor shield
	3	LSTB2	STB2 level sensor signal
	4	GND	STB2 level sensor shield
	5	LSTB1	STB1 level sensor signal
	6	GND	STB1 level sensor shield
	7	LBF	BF level sensor signal
	8	GND	BF level sensor shield
	9	LCD	CD level sensor signal

Socket code	SN	Wire definition	Description
	10	GND	CD level sensor shield
J21	1	WSTB	Standby, short circuit
	2	GND	
	3	SBF	BF waste level sensor signal
	4	GND	BF waste level sensor shield
	5	WCD	CD waste level sensor signal
	6	GND	CD waste level sensor shield
J22	1	SSTB	STB waste level sensor signal
	2	GND	STB waste level sensor shield
	3	SBF	BF replenisher level sensor signal
	4	GND	BF replenisher level sensor shield
	5	SCD	CD replenisher level sensor signal
	6	GND	CD replenisher level sensor shield

4.3 PlatfromCtrl-D113 PCB



Functions

- Supply power to paper loading step motor, exposure platform synch belt step motor, and cutter motor.
- Receive signal from paper inlet sensor, paper loading sensor, STA sensor, cutter sensor, and start sensor.
- Receive signal from paper magazine ID sensor.

Adjustment for replacement

- Set DIP switch to be the same as the previous board.

 DIP switch of the Platformctrl PCB definition:

#	Definition	Factory default setting
1	Set ON when calibrate the temperature of the working tanks by **DJ218TEST**	OFF
2	Set ON when test the sensor voltage	OFF
3		ON
4		OFF
5	ON: Enable automatically paper loading OFF: Disable automatically paper loading	ON
6		ON
7		ON
8		ON

Disposition and description

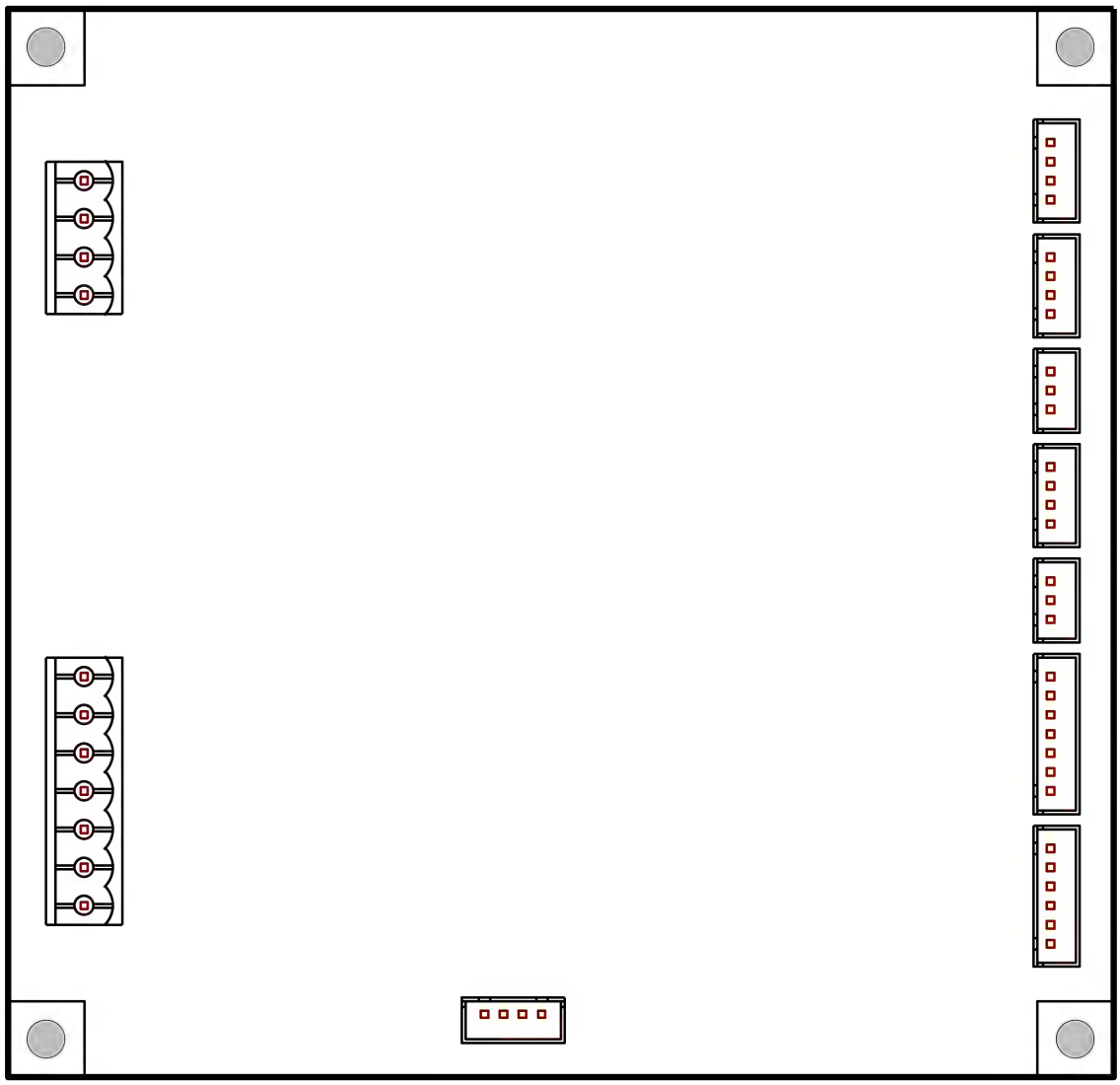
Socket code	SN	Wire definition	Description
J1	1	AC24V2	AC 24V power supply
	2		
	3	AC24V1	
	4		
J2	1	AC24V	Standby
	2	AC24V	
	3	MGN+	
	4	MGN-	
	5	OUT+	
	6	OUT-	

Socket code	SN	Wire definition	Description
J3	1	PADA	Paper loading motor phase A
	2	PADB	Paper loading motor phase B
	3	PADC	Paper loading motor phase C
	4	PADD	Paper loading motor phase D
J4	1	PAUA	Standby
	2	PAUB	
	3	PAUC	
	4	PAUD	
J5	1	PLA	Exposure platform motor phase A
	2	PLB	Exposure platform motor phase B
	3	PLC	Exposure platform motor phase C
	4	PLD	Exposure platform motor phase D
J7	1		Serial port, to WashControl PCB
	2		
	3		
J8	1	BPA	Standby
	2	BPC	
	3	GND	
J10	1	GND	Paper magazine ID sensor
	2	MAD4-12R	
	3	MAD3-10R	
	4	MAD2-8R	
	5	MAD1-7R	
J11	1	GND	Standby
	2	MAU4-6R	
	3	MAU3-5R	
	4	MAU2-4R	
	5	MAU1-3R	

Socket code	SN	Wire definition	Description
J12	1	+5V	Standby
	2	DPEB	
	3	DPEA	
	4	GND	
	5	GND	
J13	1	BP1	Standby
	2	BP2	
	3	BP3	
	4	BP4	
	5	BP5	
	6	BP6	
	7	BP7	
	8	BP+	
	9	BP+	
J14	1	BM+	Standby
	2	BM+	
	3	BM-	
	4	BM-	
J15	1	+5V	Standby
	2	UPEB	
	3	UPEA	
	4	GND	
	5	GND	
J16	1	GND	Cutter sensor GND
	2	CUTC	Cutter sensor signal
	3	CUTA	Cutter sensor power
	4	GND	Paper loading sensor GND
	5	LDC	Paper loading sensor signal

Socket code	SN	Wire definition	Description
	6	GND	Paper loading sensor GND
	7	LDA	Paper loading sensor power
J17	1	UPA	Paper inlet sensor power
	2	UPC	Paper inlet sensor signal
	3	GND	Paper inlet sensor GND
	4	DPA	Standby
	5	DPC	
	6	GND	
J18	1	+5V	Standby
	2	MDEB	
	3	MDEA	
	4	GND	
	5	GND	
J19	1	A24V1	AC 24V Power supply
	2	A24V2	
	3	CUTA	Cutter motor A
	4	CUTB	Cutter motor B
J20	1		Serial port, to Divider PCB
	2		
	3		
	4		
J21	1	STAA	STA sensor power
	2	GND	STA sensor GND
	3	STAC	STA sensor signal
	4	GND	STA sensor GND

4.4 PowerCtrl-D105 PCB



Functions

- Provide AC Contactor control signal.
- Timer

Adjustment for replacement

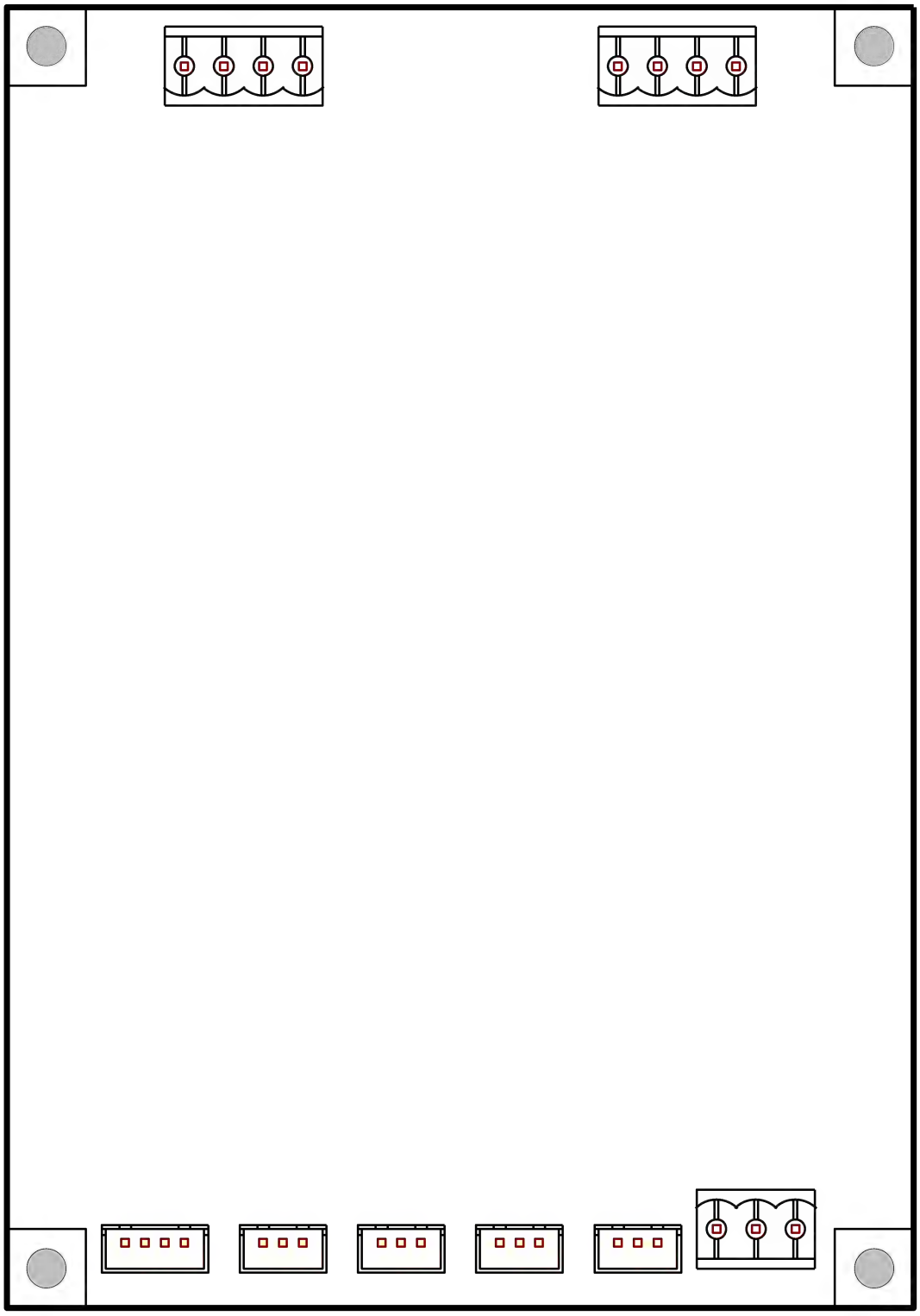
None

Disposition and description

Socket code	SN	Wire definition	Description
J1	1	A	Standby
	2	B	
	3	C	
	4	D	
J2	1	ZOOMA	Standby
	2	ZOOMC	
	3	GND	
J3	1	MAGN	
	2	MAGN	
	3	DLM2	
	4	DLML	
	5	DLM1	
	6	AC24	AC 24V Power supply
	7	AC24	AC 24V Power supply
J4	1	KEY	Drive button
	2		
	3	GND	
	4		
J5	1	TXD	Serial port, to WashControl PCB
	2	RXD	
	3	GND	
J6	1	B5V	Standby

Socket code	SN	Wire definition	Description
	2		
	3	SWITCH	
	4		
J7	1	ATX+	
	2	ATX-	
	3	RELAY+	AC Contactor loop control signal +
	4	RELAY-	AC Contactor loop control signal -
J8	1	ULSA	Standby
	2	ULS1	
	3	ULS2	
	4	ULS3	
	5	ULS4	
	6	GND	
J9	1	DLSA	Standby
	2	DLSK	
J9	3	DLS1	Standby
	4	DLS2	
	5	DLS3	
	6	GND	
	7	GND	
J11	1	AC9V	Standby
	2		
	3	AC9V	Standby
	4		

4.5 Divider-D107 PCB



Functions

- Supply power to raiser rack motors.
- Receive signal from raiser rack sensors.

Adjustment for replacement

- Set DIP switch to be the same as the previous board.

 DIP switch of the Divider PCB definition:

#	Factory default setting
1	OFF
2	ON

Disposition and description

Socket code	SN	Wire definition	Description
J1	1	RLA	Raiser rack 2 phase A
	2	RLB	Raiser rack 2 phase B
	3	RLC	Raiser rack 2 phase C
	4	RLD	Raiser rack 2 phase D
J2	1	AC 24V	AC 24V Power supply
	2		
	3		
J3	1	MOVA	Raiser rack 1 motor phase A
	2	MOVB	Raiser rack 1 motor phase B
	3	MOVC	Raiser rack 1 motor phase C
	4	MOVD	Raiser rack 1 motor phase D
J5	1		Serial port, to Platformctrl PCB
	2		
	3	GND	
	4	GND	
J6	1	GND	Raiser rack 1 inlet sensor GND
	2	STRE	Raiser rack 1 inlet sensor signal

obtain the information about the regulations in force about the handling and correct disposal of chemistry from the country's authorities in charge.

1.4 Storage

The chemicals should be stored and prepared according to the manufacture's information and advice.

All Color papers must always be stored in a cool and dry place.

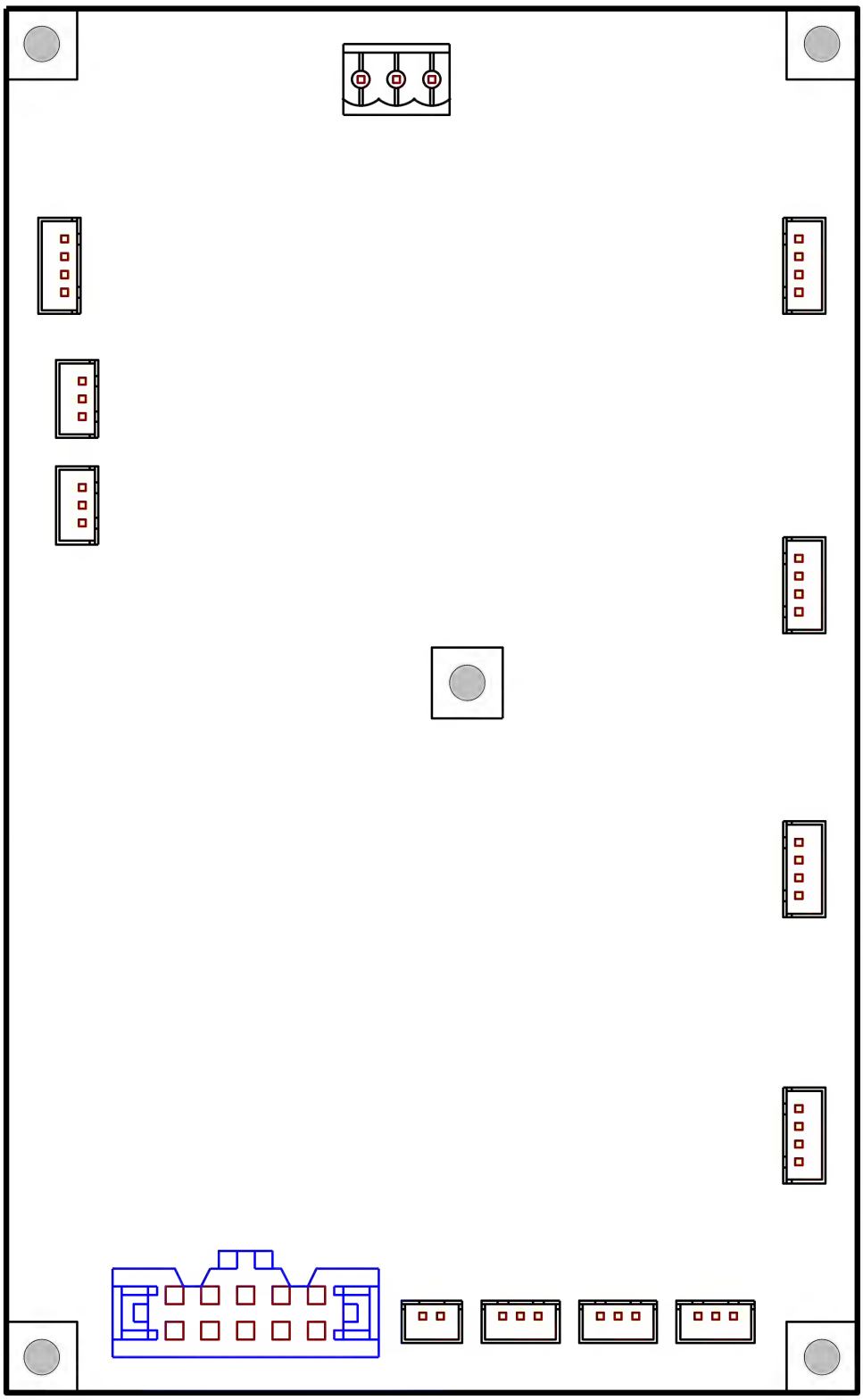
The best storage temperature is between 2℃ and 10℃.

Opened packages have to be stored at a relative humidity of 20-60%.

Storage at 20℃ over several days is possible without problems.

Storage temperatures above 30℃ should be avoided because they will cause visible alterations after only a few days.

4.6 Master-D103B PCB



Functions

- Supply power to LED matrix.
- Supply power to twister X and Y step motors.
- Receive signal from twister X and Y sensors.

Adjustment for replacement

- Redo Morning setup for all paper magazines.

2.1 Morning setup

Disposition and description

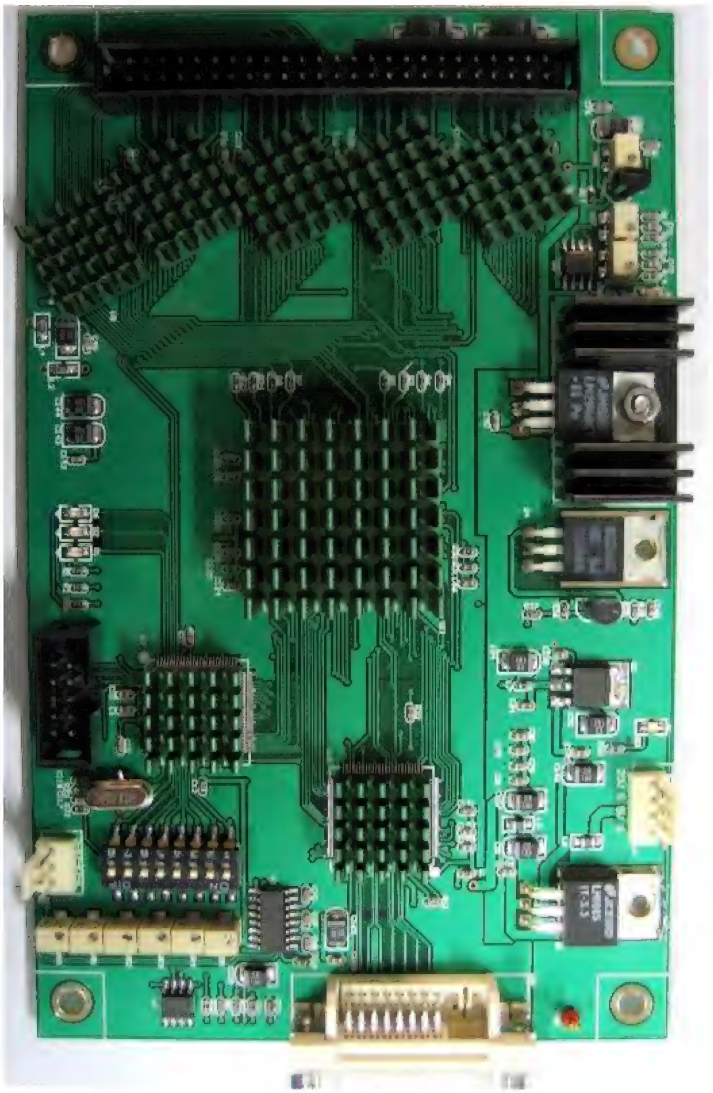
Socket code	SN	Wire definition	Description
J1	1	AC24V1	AC 24V power supply
	2		
	3	AC24V2	
J2	1	GND	Standby
	2	5V	
	3	GND	
	4	20V	
J4	1	RED	Red LED control signal
	2	LEDS VCC	LED Matrix power supply
	3	GND	GND
	4	TERM	LED Matrix temperature signal
	5	GREEN	Green LED control signal
	6	BLUE	Blue LED control signal
	7		standby
	8	VCC	5V power
	9	GND	GND
	10	LS IMP1	Light sensor signal
J6	1	OUT FAN	LED fan
	2	VCC	

Socket code	SN	Wire definition	Description
J7	1	T1 A	X twister motor
	2	T1 B	
	3	T1 NA	
	4	T1 NB	
J8	1	T2 A	Y twister motor
	2	T2 B	
	3	T2 NA	
	4	T2 NB	
J9	1	LT A	Standby
	2	LT B	
	3	LT NA	
	4	LT NB	
J10	1	GND	Y twister sensor
	2	T2 RST	
	3	5V	
J11	1	GND	X twister sensor
	2	T1 RST	
	3	5V	
J12	1	GND	Standby
	2	LT RST	
	3	5V	
J13	1	GND	Standby
	2	NC RST	
	3	5V	
J14	1		Standby
	2		
	3		
	4		

Socket code	SN	Wire definition	Description
J15	1		Serial port, to Linux PC
	2		
	3		
J16	1		Serial port, to WashControl PCB
	2		
	3		

4.7 LCD driver board-EPSON 13U

EPSON-13U LCD driver board



Disposition and description

Connector Name	function
DVI Port	Signal input; connect to DVI port of Linux PC video card.
50 pins socket	Signal output; connect to LCD.
4 pins socket	Switching Power supply input
10 pins socket	Programmed port

Functions

- Translate signal from Linux PC video card to LCD.

Adjustment for replacement

- Redo Morning setup for all paper magazines.


2.1 Morning setup

- Redo uniformity calibration.


2.6 Uniformity calibration


Don't touch the trimmers on board anytime unless you are requested and follow an instruction. Otherwise it could cause serious photo problems.

4.8 Sensors

Disposition

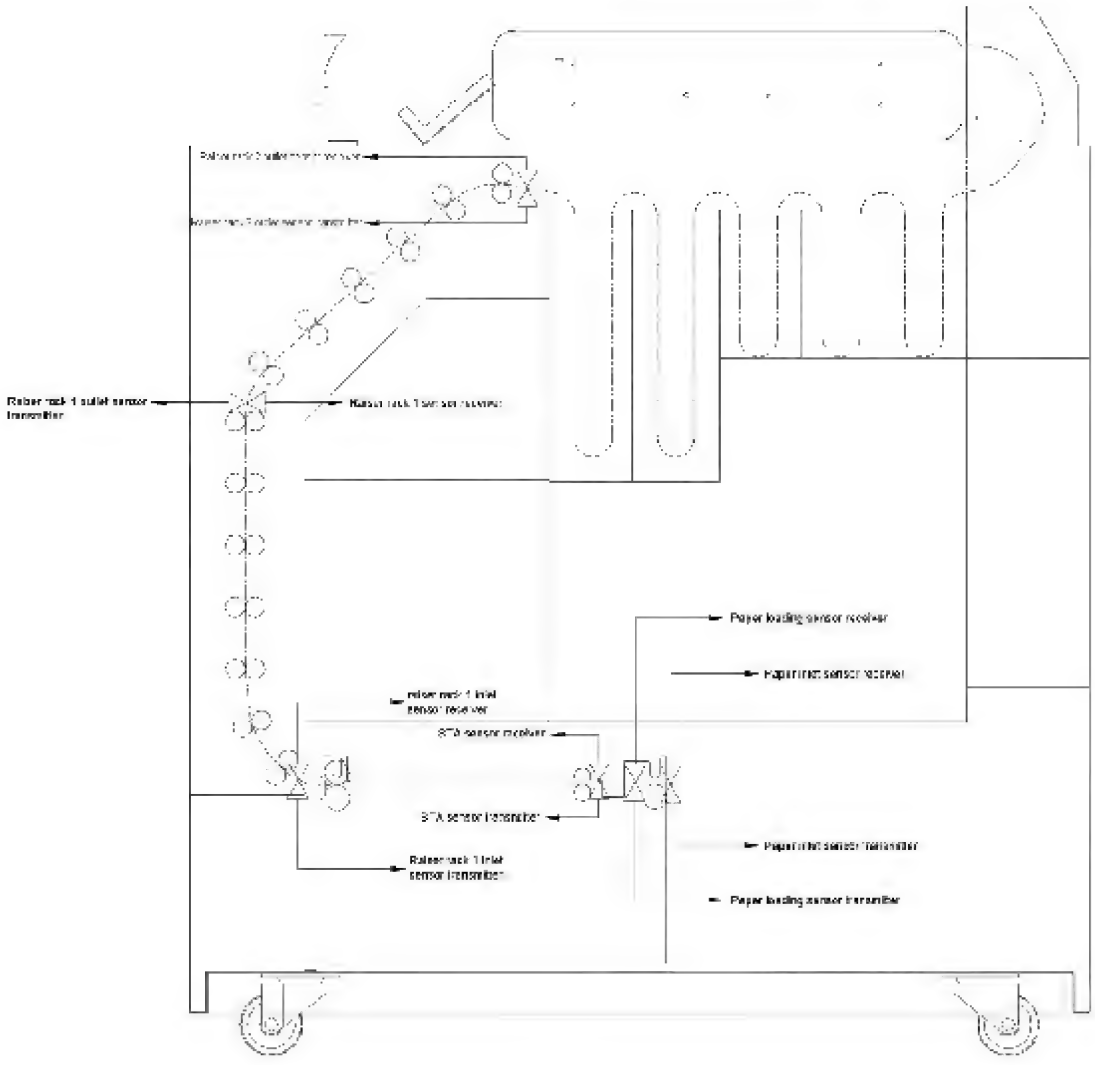


Fig 4.8.1

Fig 4.8.2

Fig 4.8.3

Fig 4.8.4

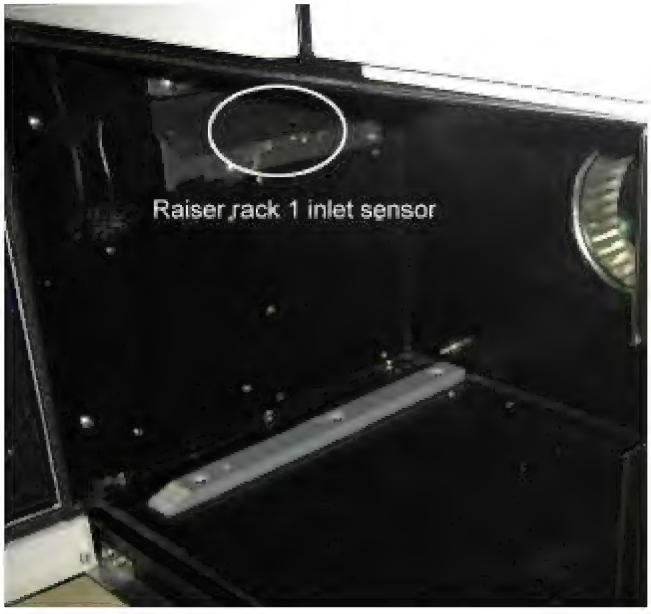


Fig 4.8.5

Fig 4.8.6

Fig 4.8.7

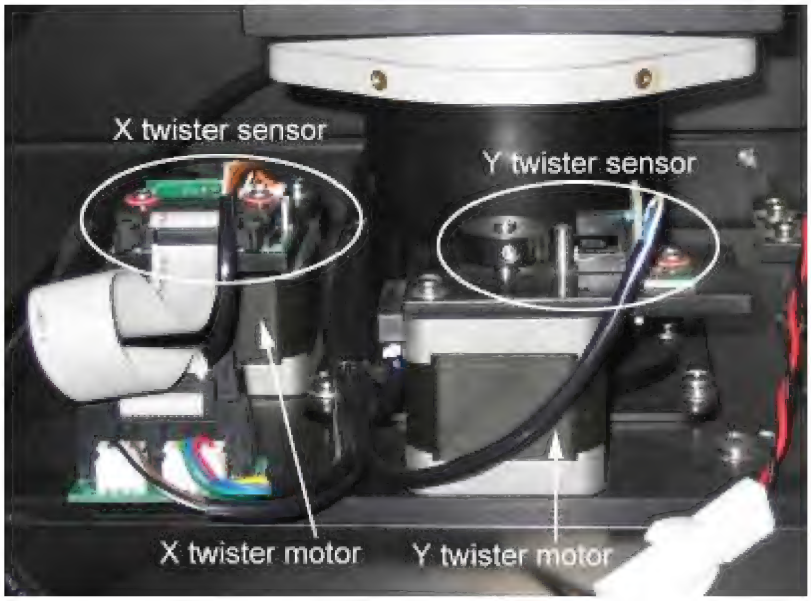


Fig 4.8.8

Fig 4.8.9

Fig 4.8.10

Illustration

4.8.11 Receiver of photographic sensor

4.8.12 Transmitter of photographic sensor

4.8.13 Paper magazine ID sensor

4.8.14 level sensor

Description

Sensor name	Use	Reference
Paper magazine ID sensor	For detecting paper magazine ID	Fig 4.8.2
Paper magazine door sensor	For detecting the paper magazine door close or open	Fig 4.8.3
Paper loading sensor	For detecting if the paper is loaded	Fig 4.8.4
STA sensor	When this sensor see the paper, the exposure platform motor start to move definite steps to move the paper into the correct exposure position.	Fig 4.8.4
Cutter sensor	For detecting cutter home position	Fig 4.8.4
Raiser rack 1 inlet sensor	For detecting paper at the raiser rack 1 inlet	Fig 4.8.5
Raiser rack 1 outlet sensor	For detecting paper at the raiser rack 1 outlet	Fig 4.8.6
Raiser rack 2 outlet sensor	For detecting paper at the raiser rack 2 outlet	Fig 4.8.7
X twister sensor	For detecting the home position of Twister X	Fig 4.8.8
Y twister sensor	For detecting the home position of Twister Y	Fig 4.8.8
Working tank temp. sensor	For detecting the temperature of working solution	Fig 4.8.9

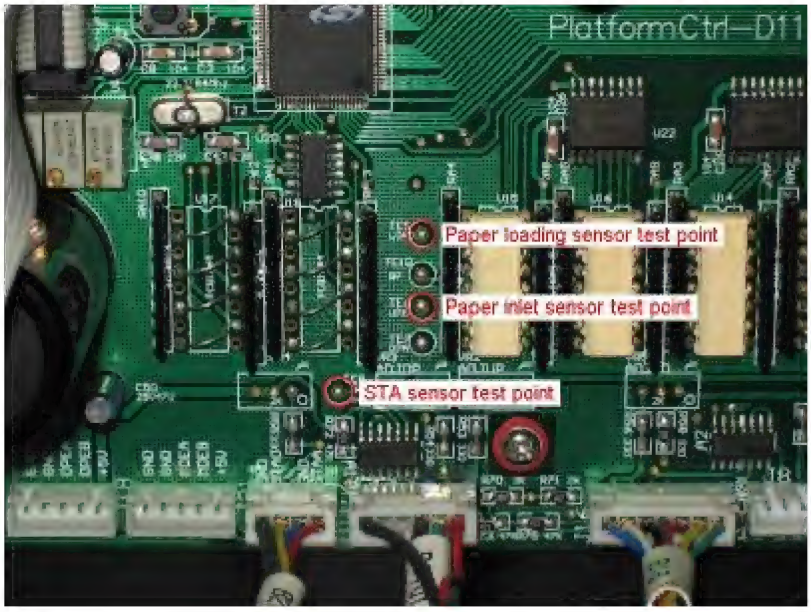
Sensor name	Use	Reference
Dryer temp. sensor	For detecting dryer temperature	Fig 4.8.10
Working tank level sensor	For detecting working tank level	Fig 4.8.9
Replenisher tank level sensor	For detecting replenisher tank level	Inside each replenisher tank

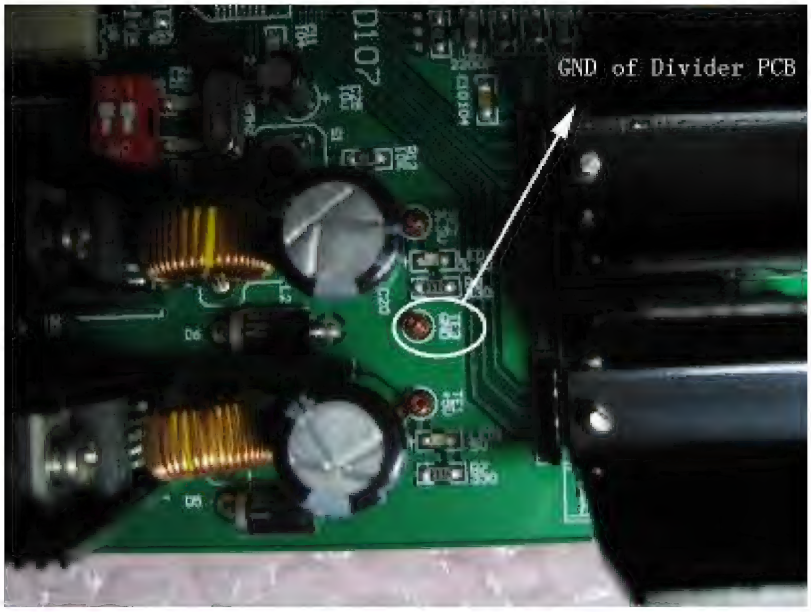
Malfunction diagnoses

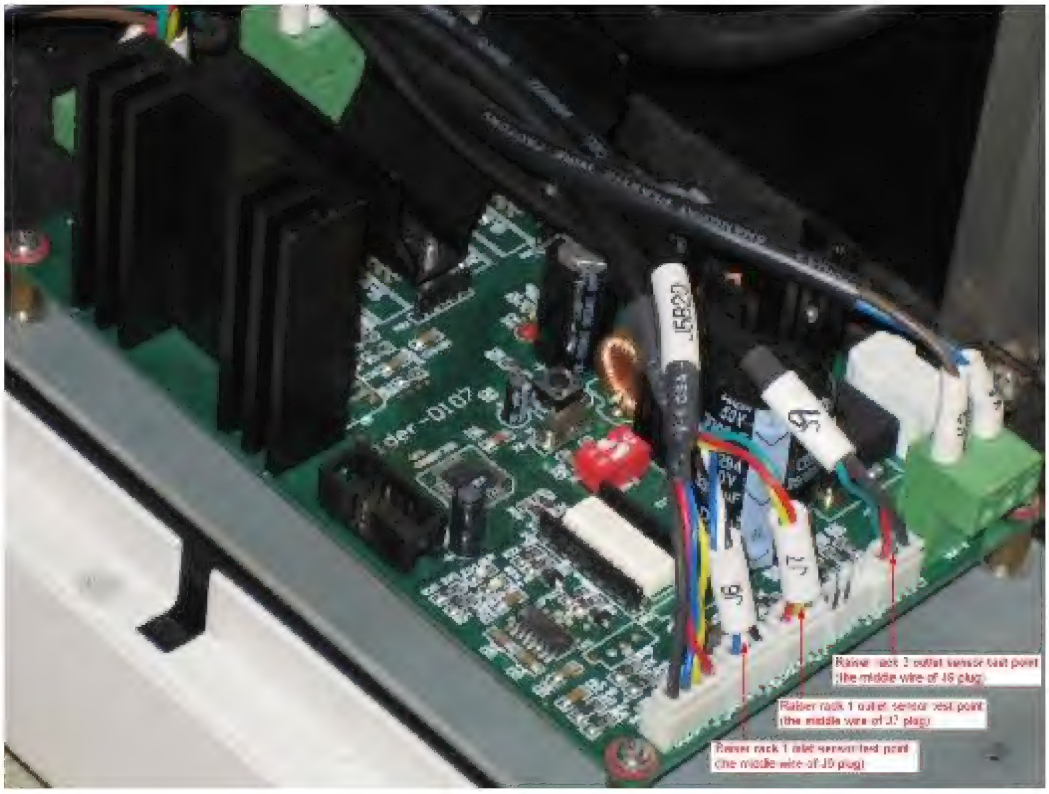
If a sensor is under suspicion of malfunction, test the sensor as the following:

On Platformctrl PCB and Washcontrol PCB, set DIP switch No.2 ON.

Use a multi-meter to measure voltage between corresponding sensor voltage test point and GND, see the following illustration:


PlatformCtrl-D11
Paper loading sensor test point
Paper inlet sensor test point
STA sensor test point


GND of Divider PCB



Insert a piece of paper in the middle of transmitter and receiver of the sensor or being detected.

All the sensors must be tested <1V without paper and >4V with paper.

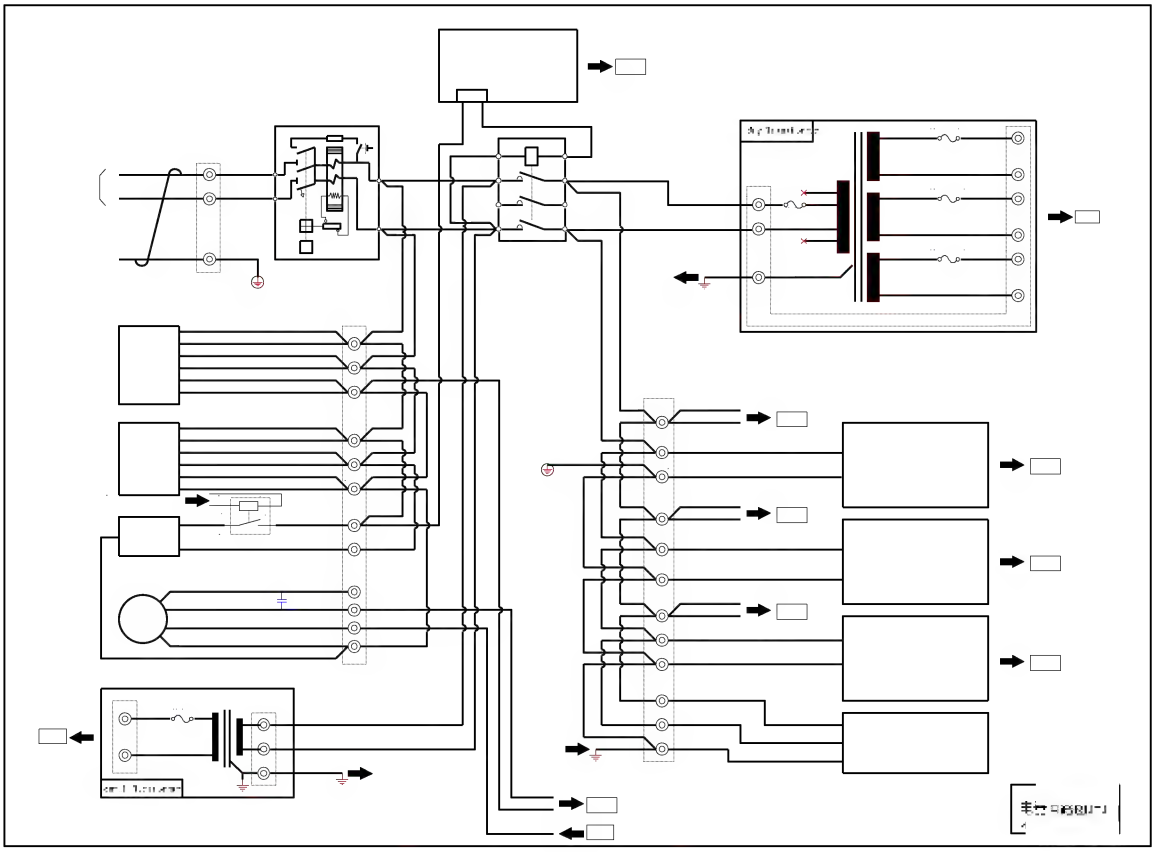
Both situation must be tested for each sensor (either paper has been detected and has not been detected).

After finish on Platformctrl PCB and Washcontrol PCB, switch DIP switch No.2 to OFF.

Replace the corresponding sensor if test result is not correct.

When replacing sensor, don't lose the red insulating washer.

4.9 AC Wiring diagram 1-1



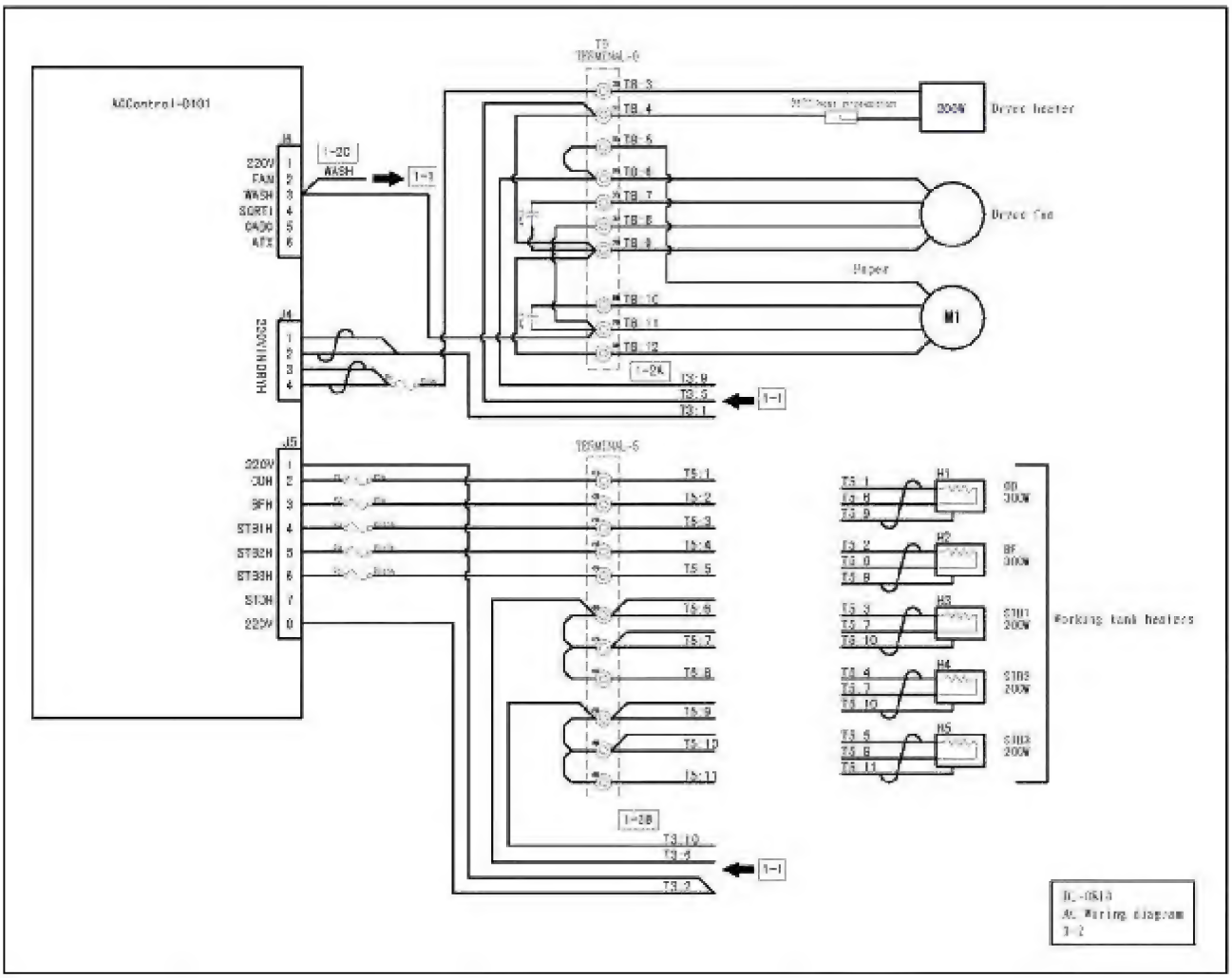
- **Printer and paper processor start logic**

  After air switch has been set to ON, AC 220V is sent to Liner transformer, Liner transformer output AC9V(power supply for timer) and AC24V (power supply for Powerctrl PCB) is sent to Powerctrl PCB, Powerctrl PCB works, while a AC220V live wire connect to ACControl PCB J8 port via ACIN wire.

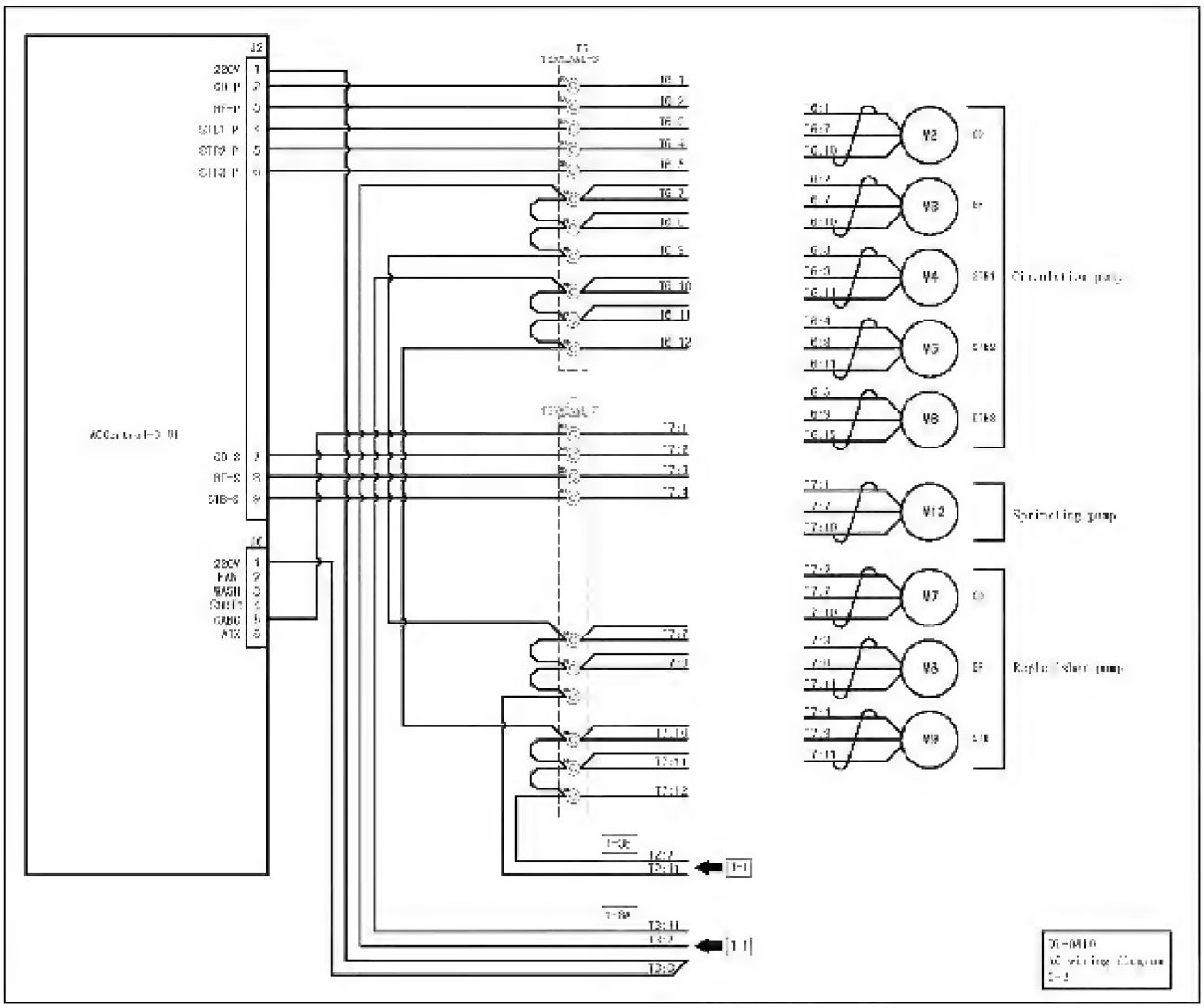
  1. Press Drive button, signal sent to Powerctrl PCB J4 port.
  2. Powercontrl PCB J7 port sends a signal to ACControl PCB J7 port via RELAY+ and RELAY- wire.
  3. ACControl PCB J8 port ACOUT wire outputs AC220V to AC contactor loop to turn it ON.
  4. AC contactor puts through AC 220V from air switch to printer and paper processor.

  AC220V carried by ACControl PCB J8 port ACIN and ACOUT wire is only for turning the AC contactor on.

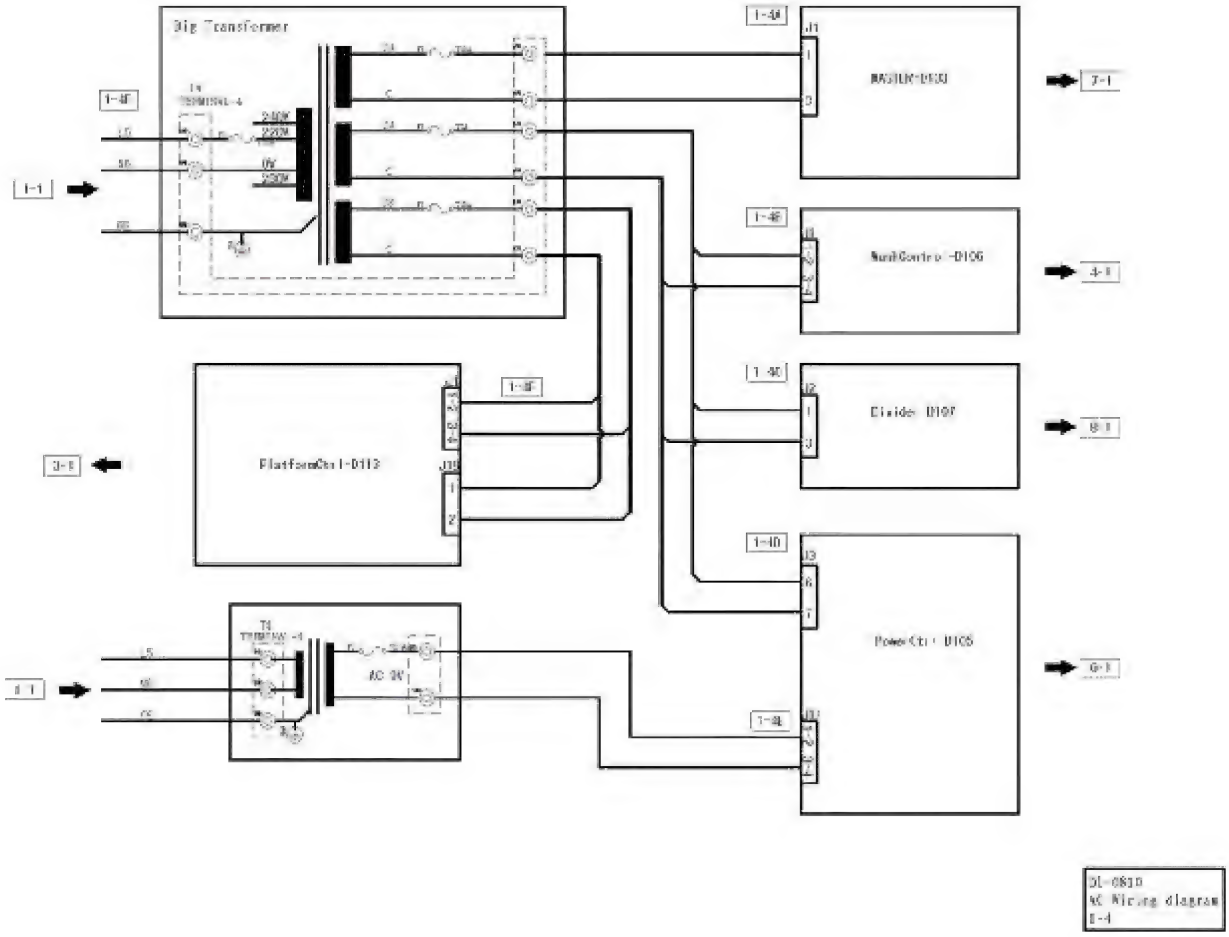
4.10 AC wiring diagram 1-2



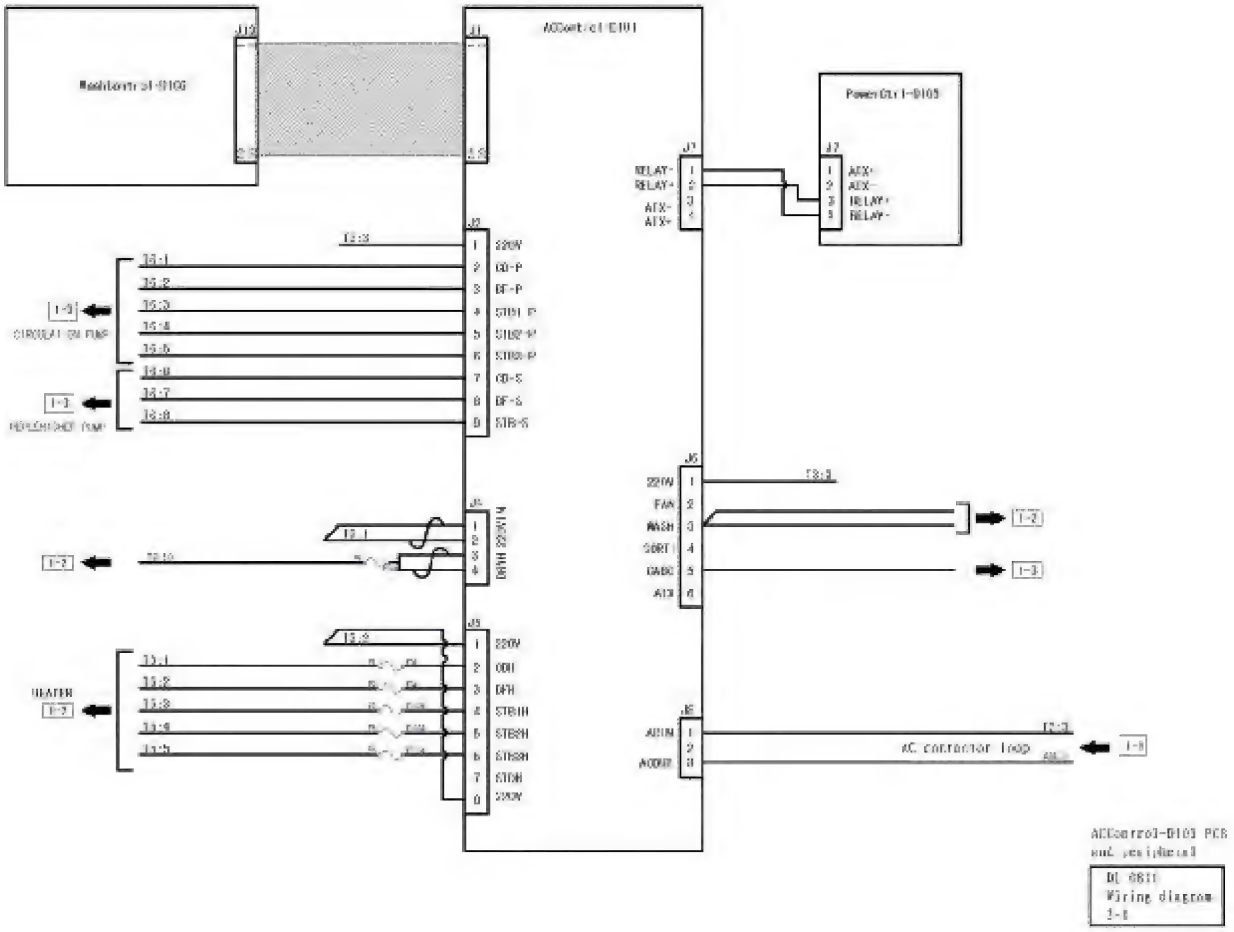
4.11 AC wiring diagram 1-3



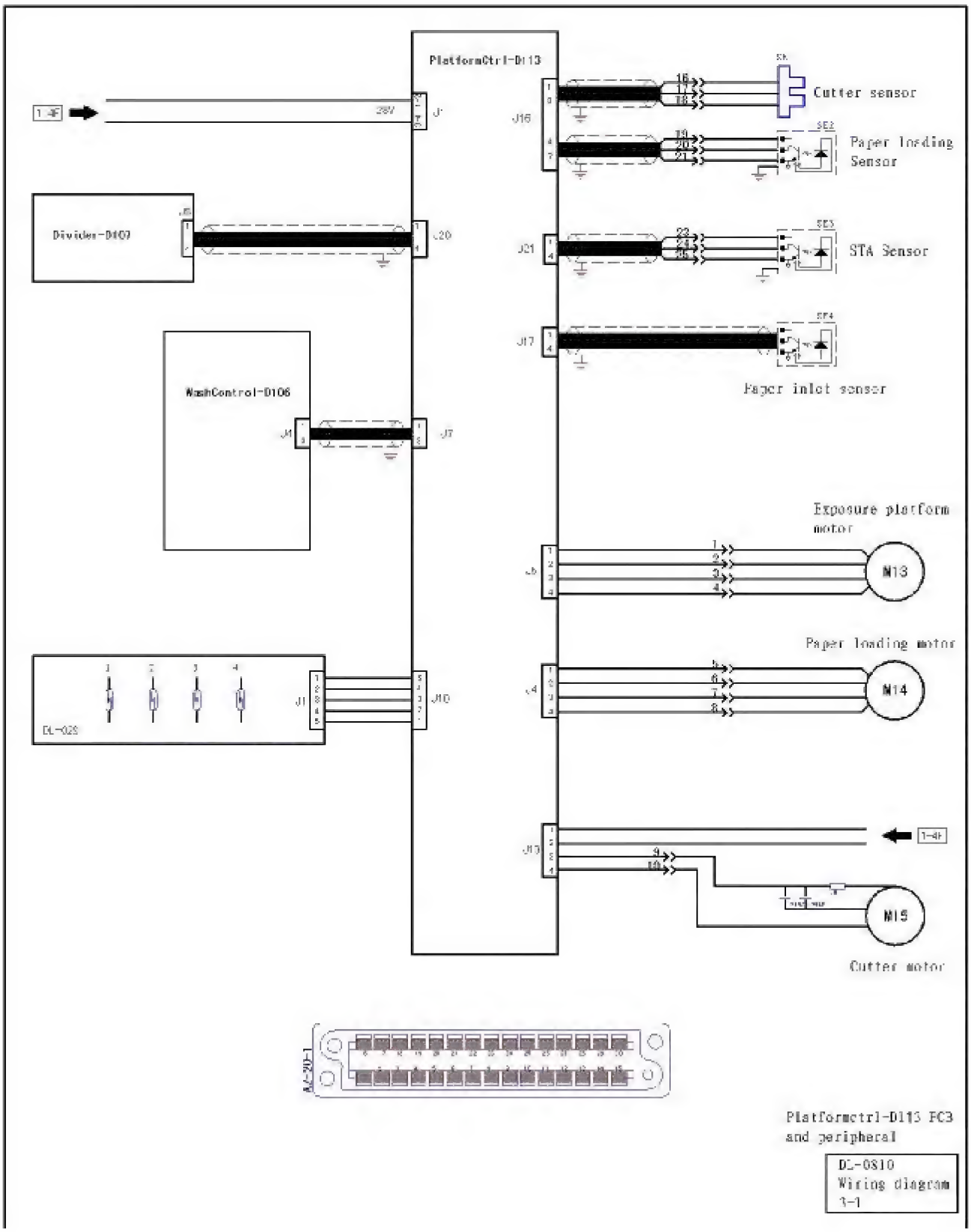
4.12 AC wiring diagram 1-4



4.13 ACControl-D101 PCB and peripheral 2-1



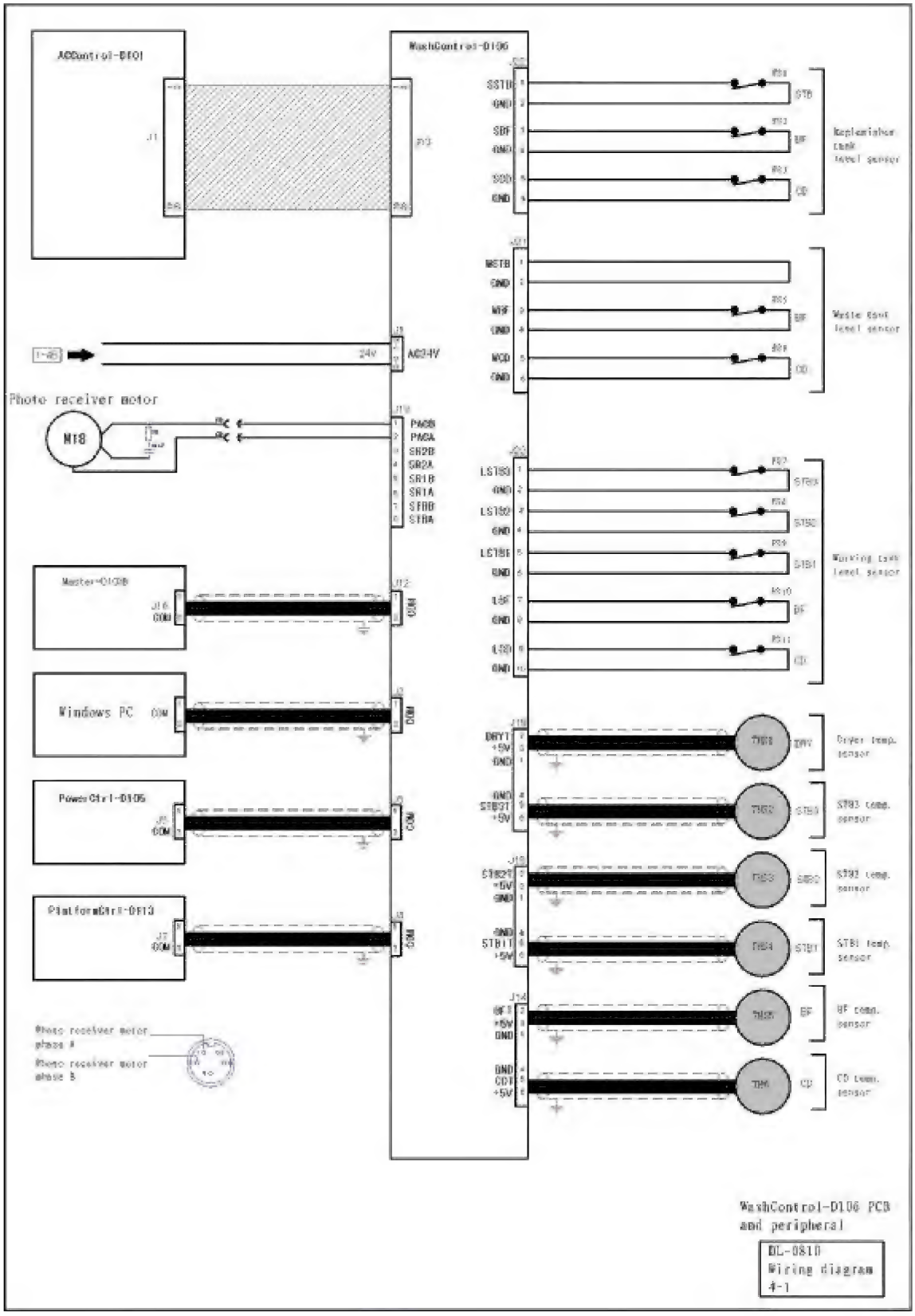
4.14 Platformctrl-D113 PCB and peripheral 3-1



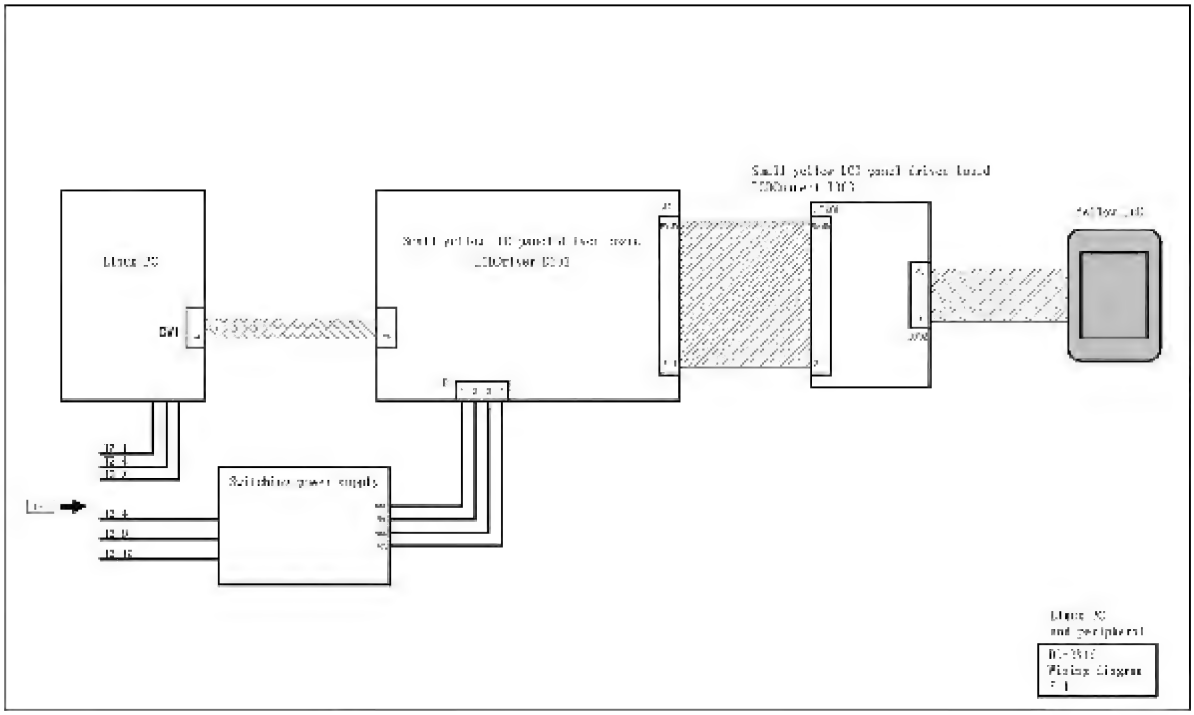
- **Definition of AZ-20-1**

#	definition
1.	Exposure platform motor phase A
2.	Exposure platform motor phase B
3.	Exposure platform motor phase C
4.	Exposure platform motor phase D
5.	Paper loading motor phase A
6.	Paper loading motor phase B
7.	Paper loading motor phase C
8.	Paper loading motor phase D
9.	Cutter motor A
10.	Cutter motor B
11.	standby
12.	standby
13.	standby
14.	standby
15.	standby
16.	Cutter sensor power
17.	Cutter sensor signal
18.	Cutter sensor GND
19.	Paper loading sensor power
20.	Paper loading sensor signal
21.	Paper loading sensor GND
22.	Shield
23.	STA sensor GND
24.	STA sensor signal
25.	STA sensor power
26.	shield
27.	standby
28.	standby
29.	standby
30.	standby

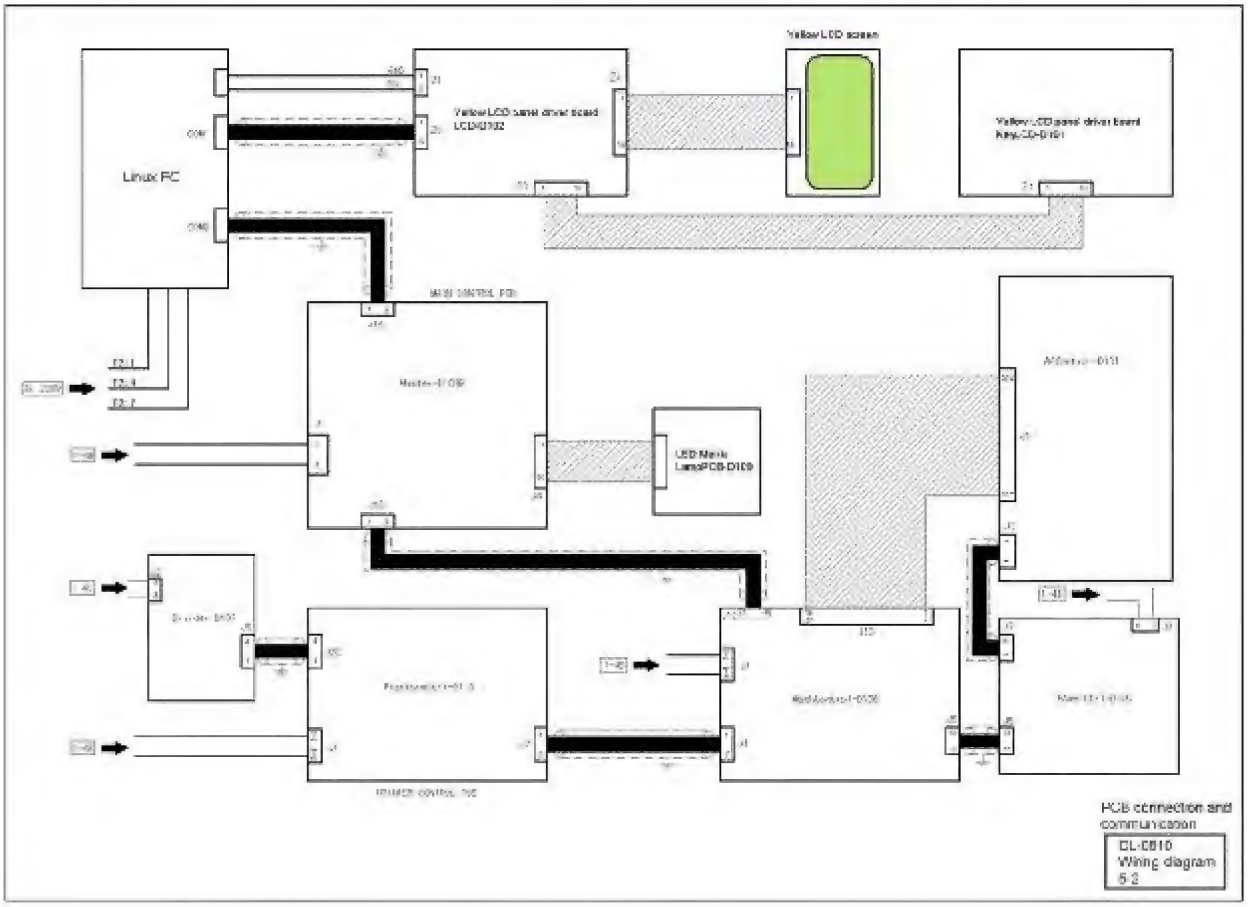
4.15 WashControl-D106 PCB and peripheral 4-1



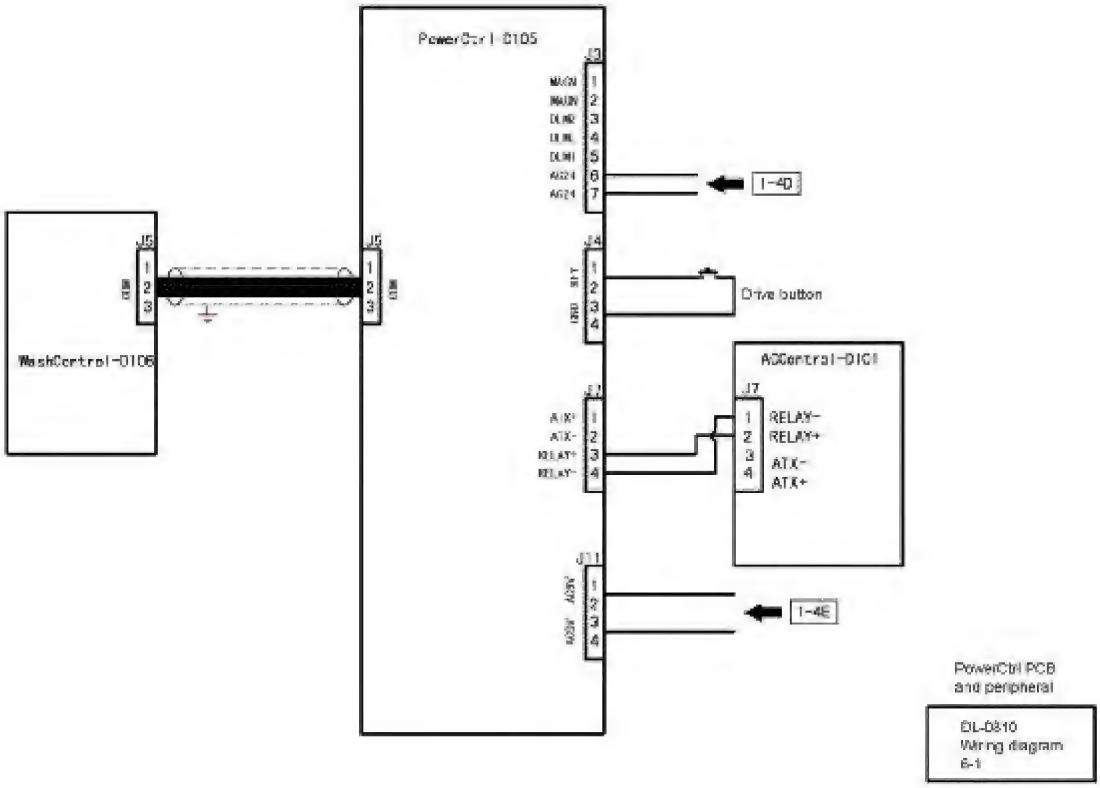
4.16 Linux PC and peripheral 5-1



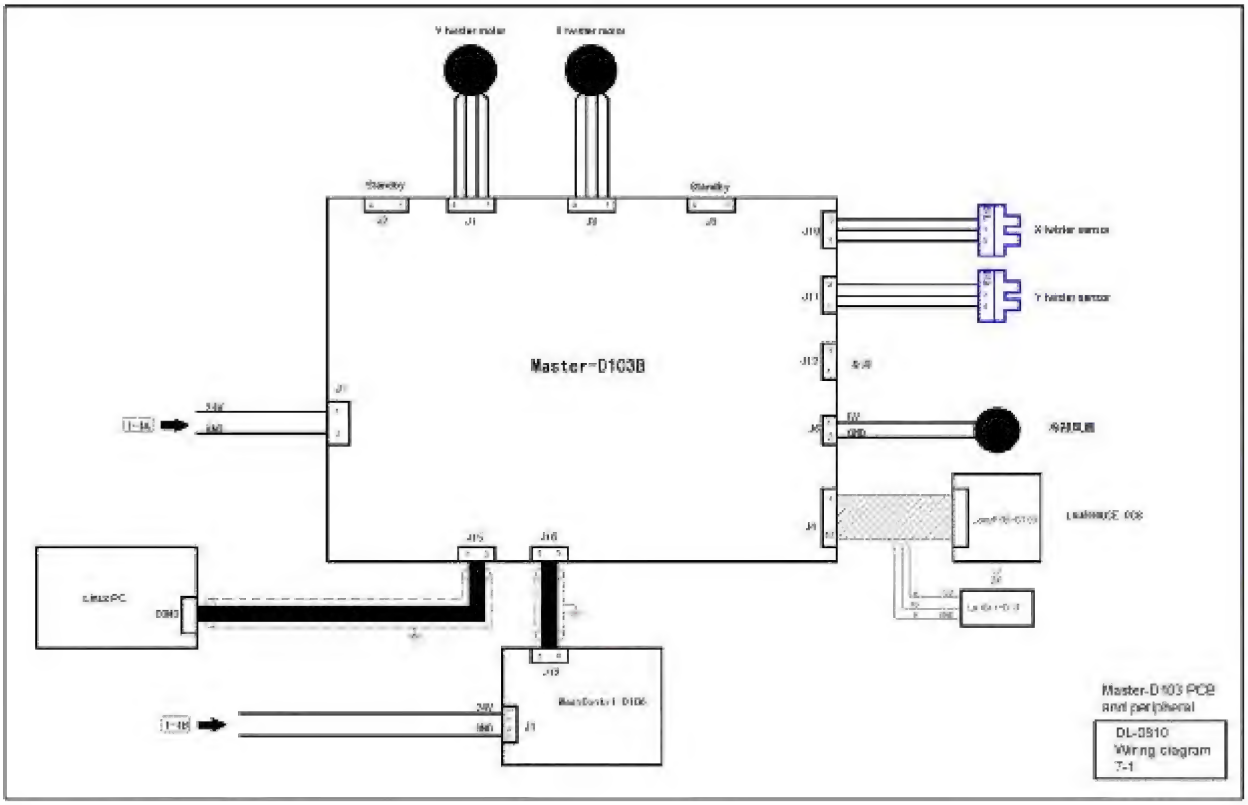
4.17 Linux PC and peripheral 5-2



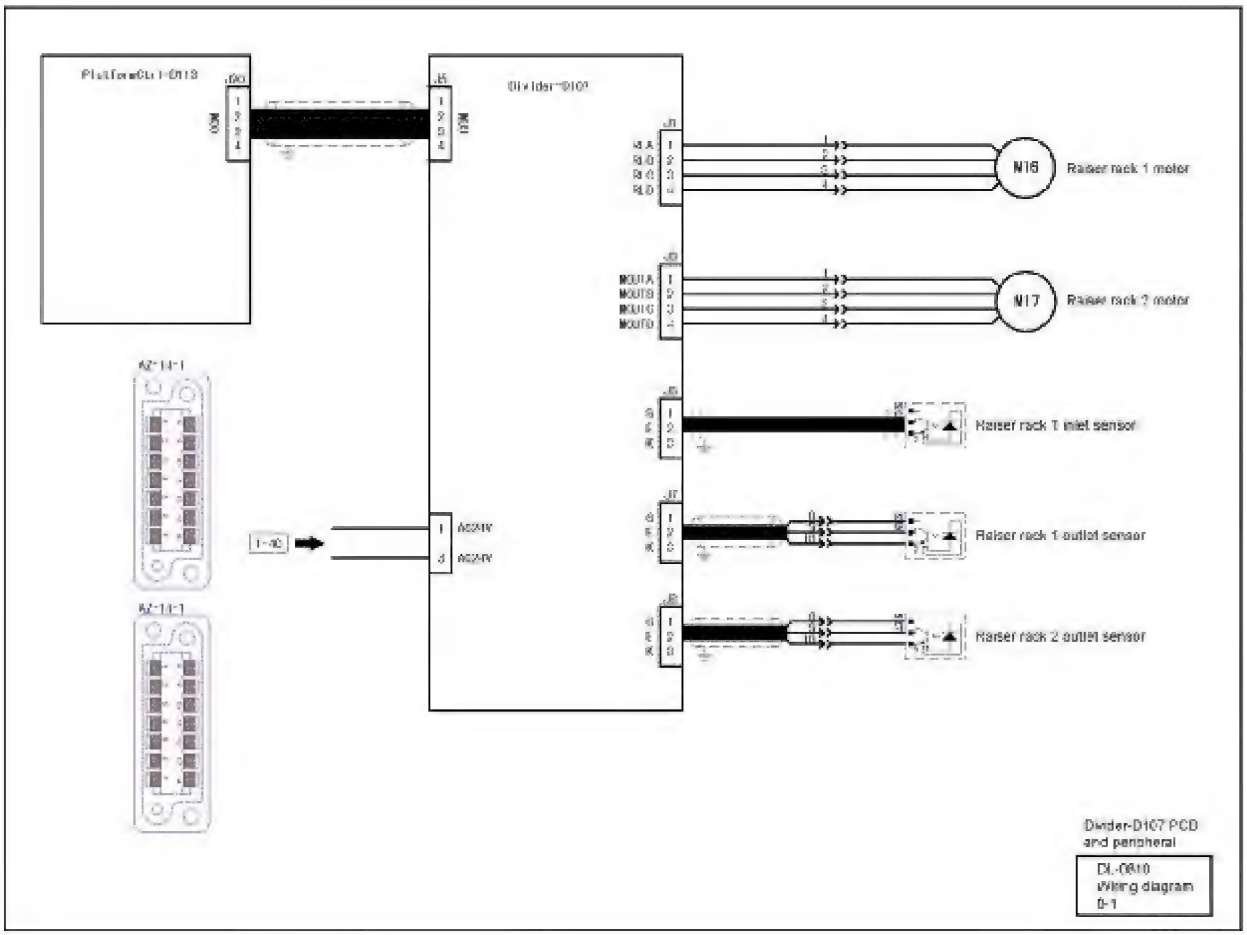
4.18 PowerCtrol-D105 PCB and peripheral 6-1



4.19 Master-D103B PCB and peripheral 7-1



4.20 Divider-D107 PCB and peripheral 8-1



5

Chapter 5 Trouble shooting

This chapter describe how to solve the troubles.

obtain the information about the regulations in force about the handling and correct disposal of chemistry from the country's authorities in charge.

1.4 Storage

The chemicals should be stored and prepared according to the manufacture's information and advice.

All Color papers must always be stored in a cool and dry place.

The best storage temperature is between 2℃ and 10℃.

Opened packages have to be stored at a relative humidity of 20-60%.

Storage at 20℃ over several days is possible without problems.

Storage temperatures above 30℃ should be avoided because they will cause visible alterations after only a few days.

5.1 Error index

Linux LCD Panel error messages

#	Description
003	Paper loading error
008	Cassette not setup
009	Blocked
030	Separator blocked
031	No connection with master
032	Tape failure
033	Display failure
034	Photo preparation failure

Photo problems

#	Description
700	Photo comes out not dry
701	Paper scratch
705	Photo comes out dirty
706	Image out of focus
707	Color noise on the photo
708	Strong grid lines on the photo
709	Vertical lines on the photo
710	Color or density Uniformity of the photo is no good
711	Photos Chaos on sorter
712	White borders on the photo
713	Color is very different with the monitor preview
717	Paper length is shorter or longer than the setting length of the corresponding format
718	Image magnification or scale does not match the monitor preview
719	Photo overlapping

Please refer to Error index on page 147

Mechanical problems

#	Description
300	Paper has jammed in the cutter section
301	Paper can not be cut off
310	Replenishing pump doesn't work
311	Low replenishing flux

Electrical problems

#	Description
500	Linux recovery failure
501	Can not connect to printer
504	Processing solution doesn't warm up
505	Linux startup failure

Please refer to Error index on page 147

5.2 Corrective actions

003 Paper loading error

1. The head of the paper roll is rugate.
   - Unwind paper and remove paper magazine.
   - Cut the rugate paper head with scissors.
   - Install paper magazine back onto machine.
2. Paper has jammed in the cutter section.

300 Paper jam in cutter section

008 Cassette not setup

The current cassette has not been registered in **Maintenance**.

- Run **Maintenance**.
- Click **Service**, and then click **cassettes**.
- Click **New**.
- Click the number of the current cassette ID to register the current cassette.

009 Blocked

Replenisher tank is low level, computer stop printing to avoid bad print quality.

Add replenisher solution to the replenisher tanks.

031 No connection with master

This message means no commutations between Linux PC and Master PCB.

1. The processor has not been turned on.

   Press the Drive button to turn the processor on.
2. J15 or J16 plug of the Master PCB is loose.

   Shut down the machine and check the J15 and J16 plug connection.
3. The COM port plugs of Linux PC mother board are loose.

   Shutdown the machine, on the Linux mother board check the COM port plugs connections.

Please refer to Error index on page 147

4. Master PCB is broken.

Replace Master PCB.

4.6 Master-D103B PCB

032 Tape failure

On Linux LCD panel Press **C** button.

033 Display failure

1. J4 plug (supply power to LED) is disconnected or loose.

Plug in J4 plug.

2. LED has is broke.

Replace LED.

3.18 LED assembly replacement

3. Master D-103 PCB is broken.

Replace Master D-103 PCB.

4.6 Master-D103B PCB

034 Photo preparation failure

Paper has jam in raiser rack 1 or raiser rack 2.

Shut down machine, carefully check raiser rack 1 and raiser rack 2 and remove paper.

300 Paper jam in cutter section

3.19 Paper jam in cutter operation

301 Paper can not be cut off

Please refer to Error index on page 147


3.20 Cutter adjustment

310 Replenishing pump doesn't work

1. The power switch of the replenishing pump has been set to OFF.

   On replenishing pump set power switch to ON.

2. Replenishing pump is broken.

   Replace replenishing pump.

3. ACControl PCB is broken.

   Replace the ACControl-D101 PCB

311 Low replenishing flux

1. Replenishing pump efficiency setup is not correct.


2.7 Replenishing system setup

2. Regeneration doses setup is not correct.


2.7 Replenishing system setup

500 Linux Recovery failure

1. The BIOS setting of Linux PC mother board is not correct.

   Configure BIOS of Linux PC mother board.


3.3 Linux system backup and recovery

2. Scratch on the CD or the CD is dirty.

   Clean the CD.

3. motherboard model or video card model of Linux PC is not correct.

   The hardware configuration of Linux PC can not be changed to other models.

4. Linux PC hard disk cable, CD-Drive cable, video card or memory bank are loose.

   Check all these connections.

Please refer to Error index on page 147

5. The Linux hard disk or the Linux CD-Drive is broken.

   Replace the hard disk or the CD-Drive.

501 Can not connect to printer

This message usually appears on the Windows PC monitor.

1. the Linux PC has been shut down.

   Turn on the Linux PC and wait for Linux loaded.

2. Network connection has been broken off.

   Check network cables and connectors of HUB.

3. IP address or Subnet mask of client PC is not correct.

   Set IP address and Subnet mask of client PC.

3.5 Client PC setup

504 Processing solution doesn't warm up

1. Fuse of heater has been broken.

   - Shut down machine and remove the back cover of the machine.
   - Check and replace fuse.

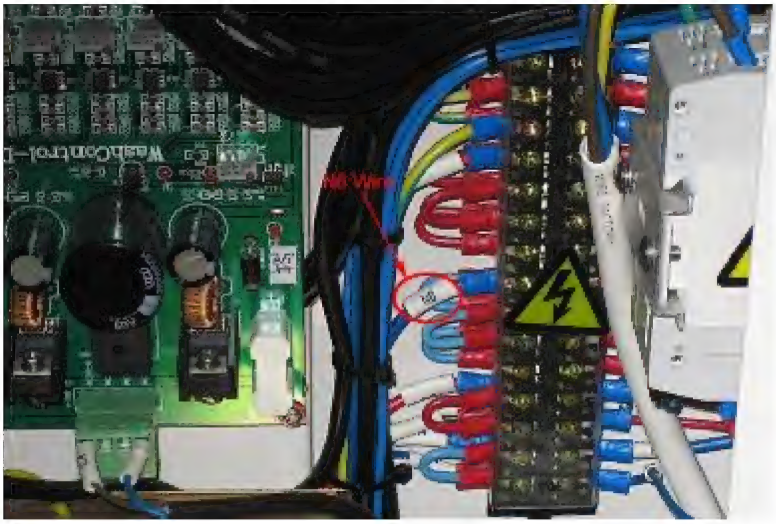
Please refer to Error index on page 147

2. Heater is broken.

   Shut down machine, and use a multi meter to test the resistance between the corresponding wire of AC Control PCB J4 plug and **N6** wire.

	Mark	definition
J5 plug of ACControl PCB	CDH	CD heater power supply
	BFH	BF heater power supply
	STB1H	STB1 heater power supply
	STB2H	STB2 heater power supply
	STB3H	STB3 heater power supply

   The N6 wire can be found near the air switch:



   If the test value is more than 400ohm then heater is broke.

   Replace heater if it is broken.

3. ACControl PCB is broke.

   Replace ACControl PCB.

505 Linux startup failure

1. PCB and cable connection of Linux PC is loose during shipment.

   Check Linux PC video card, memory bank shall be installed on the main board properly, and the hard disk connection shall be good.

2. Linux PC is affected by moisture.

   Use a fan to dry Linux PC, and restart Linux PC after 15 minutes.

Please refer to Error index on page 147

3. Linux main board CMOS data is lost.

   Connect a monitor and a keyboard to Linux PC main board. On keyboard press **DEL** key when starting the Linux to enter CMOS, check the setting according to requirement, and then **save and exit**.

   Replace main board battery if necessary.


3.3 Linux system backup and recovery

4. Backup data and re-install Linux system, and then restore data using Linux recovery CD.


3.2 Data backup and restore


3.3 Linux system backup and recovery

700 Photo comes out not dry

1. Working solution has not reached the setting temperature, so that dryer has not started to work.

   Wait for working solution temperature reach the setting temperature.

2. Dryer temperature setting is too low.
   Increase dryer temperature in **Maintenance** > **Temperatures**.

3. Dryer temperature is not correct.

   Calibrate dryer temperature by **DJ218TEST**.


2.4 Temperature calibration

4. Processing solution is dirty.

   Dirty solution could cause sticky photos.

   Clean or replace filters; clean racks and working tanks

- 3.7 Filter cleaning and replacement

Please refer to Error index on page 147

- 3.9 Rack cleaning and examination
- 3.10 Check and clean working tanks and pipes

5. fuse of dryer is broken.

   Shut down machine, remove back side cover of machine and then check and replace the dryer fuse.

6. Dryer fan is broken.

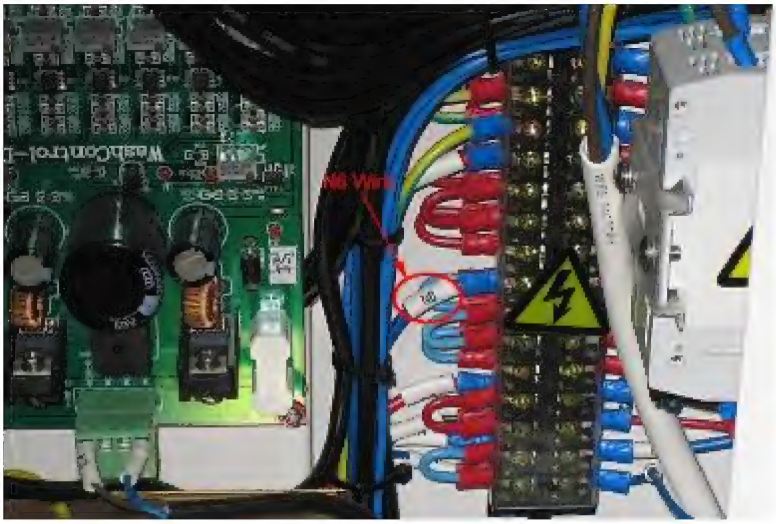
   Power supply of the dryer fan and main processing motor is parallel connection. When racks are running, dryer fan shall run as well. Otherwise (if no airflow felt in the dryer tank) dryer fan is broken.

   Replace dryer fan.

7. Dryer heater has been broken.

   Shut down machine, and use a multi meter to test the resistance between the **DRTT** wire of AC Control PCB J4 plug and **N6** wire.

Please refer to Error index on page 147



If the test value is around 220ohm then the dryer heater is OK.
If the test value is more than 500 ohm then the dryer heater is broken.

Replace dryer heater if it is broken.

8. ACControl PCB is broken.

   Replace ACControl PCB.

701 Paper scratch

1. Working solution is dirty.

   Clean or replace filters; clean racks and working tanks

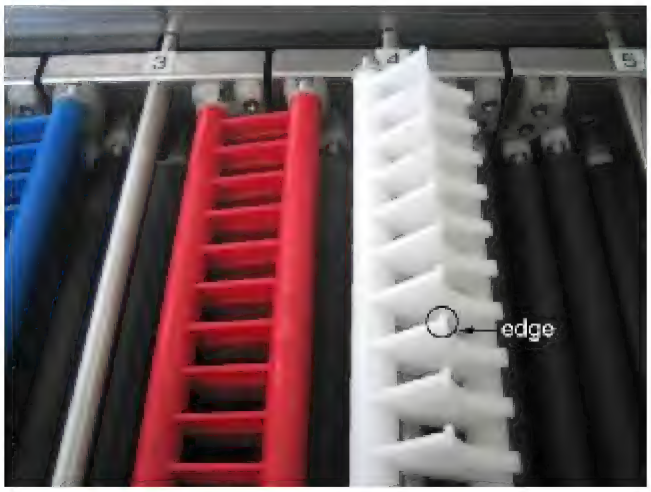
   

   - 3.7 Filter cleaning and replacement
   - 3.9 Rack cleaning and examination
   - 3.10 Check and clean working tanks and pipes

2. The edge of the cross over has been damaged.

   Replace the damaged section of the cross over.

Please refer to Error index on page 147



705 Photo comes out dirty

Working solution is dirty.

Clean or replace filters; clean racks and working tanks

- 3.7 Filter cleaning and replacement
- 3.9 Rack cleaning and examination
- 3.10 Check and clean working tanks and pipes

706 Image out of focus

1. Image of the source file is not sharp.

Try to apply 1 or 2 sharpness to the source file by **Istudio**.

2. Lens is out of focus.

   Adjust focus of the lens.

3.15 Lens focus adjustment

707 Color noise on photos

1. Machine has not been start-up properly.

   Shut down machine and start-up machine again properly.

Please refer to Error index on page 147

Chapter 2 Maintenance > Prologue

2. Linux PC video card is broken.

   Replace the Linux PC video card.

708 Strong grid lines on photos

Re-calibrate twister 4.

2.5 Twister 4 calibration

709 Vertical lines on the photos

Uniformity shall be calibrated when Vertical lines appear on the photos, especially in light or dark area.

2.6 Uniformity calibration

710 Uniformity of photo is not good

This problem can be identified easily on passport photos.

Re-do Uniformity Mask calibration.

2.6 Uniformity calibration

712 White borders on photos

1. Redo ABCD calibration for the corresponding format of photos.

2.2 Exposure center (ABCD) calibration

2. For 152x102mm or 127x89mm size, if white border still exist after ABCD calibration:
   - Check if paper length is too long.
   - Check double exposure center.

2.3 Double exposure center calibration

Please refer to Error index on page 147

Single exposure mode offers a higher center precision than double exposure mode. To switch to single exposure mode for 152x102mm or 127x89mm:

- On Windows PC click **Start**.
- Click **Run** and type **\\10.1.1.1\win-software** and then enter.
- Run **Iregedit**.
- Specify **etc/proc/capabilities/separator**.
- In **Value** change the value to **0** and click **Save now**.
- On Linux LCD panel restart Linux PC.

Value of etc/proc/capabilities/separator	Definition
0	Single exposure mode
1	Automatic double exposure mode for 152x102mm and 127x89mm

3. STA sensor is broken.

Replace STA sensor.

4.8 Sensors

713 Color is very different from the monitor preview

2.8 Color management-from monitor to photos

717 Paper length is longer or shorter than the setting length of the corresponding format

In **Maintenance** -> **formats**, increase or decrease the format setting length by mm manually, no need to change the format name.

718 Image magnification or scale does not match the monitor preview

Please refer to Error index on page 147

3.17 Image magnification calibration

719 Photo overlapping

1. springs of the racks are loose.

Replace springs if it is broken.

3.9 Rack cleaning and examination

2. Rubber sleeve of the racks is distorted.

Replace rubber sleeve.

3.8 Rack sleeve replacement

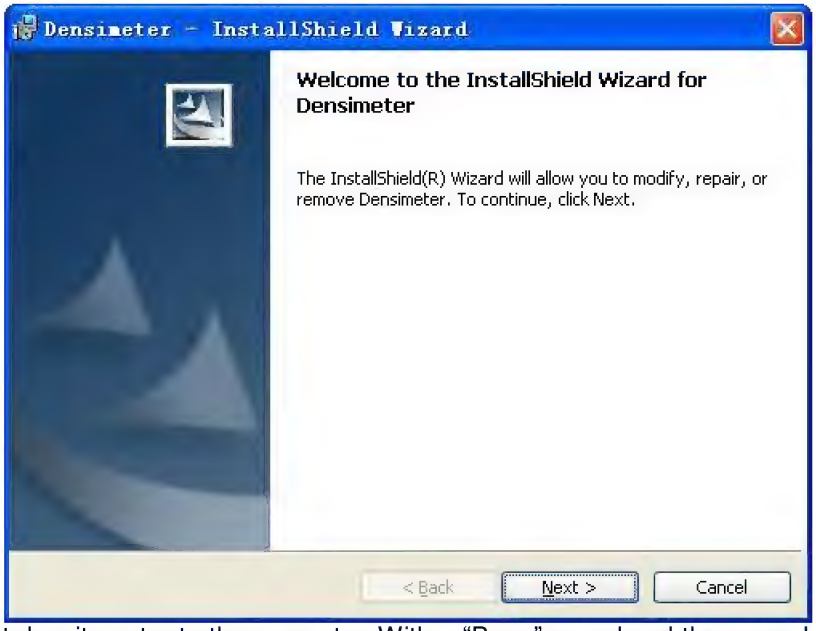
Appendix

DL-202Ps Densitometer

Installation

The detail is as follows:

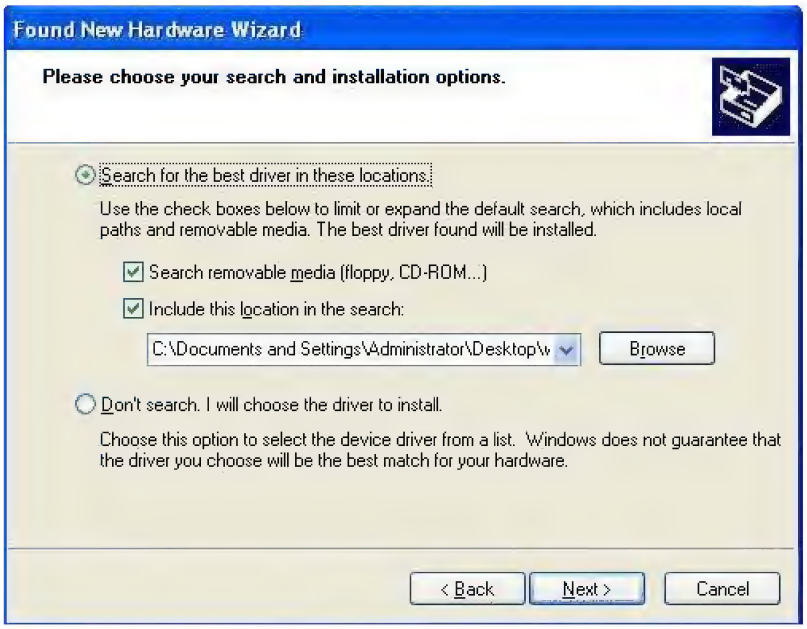
1. Insert the installation CD of DL-202Ps densitometer, click **Densitometer.msi** to begin installation wizard.
2. Follow the installation wizard to complete installation.



3. Connect densitometer to the computer. With a “Beep” sound and the green LED on, the densitometer is detected by the computer (See Figure3-1).

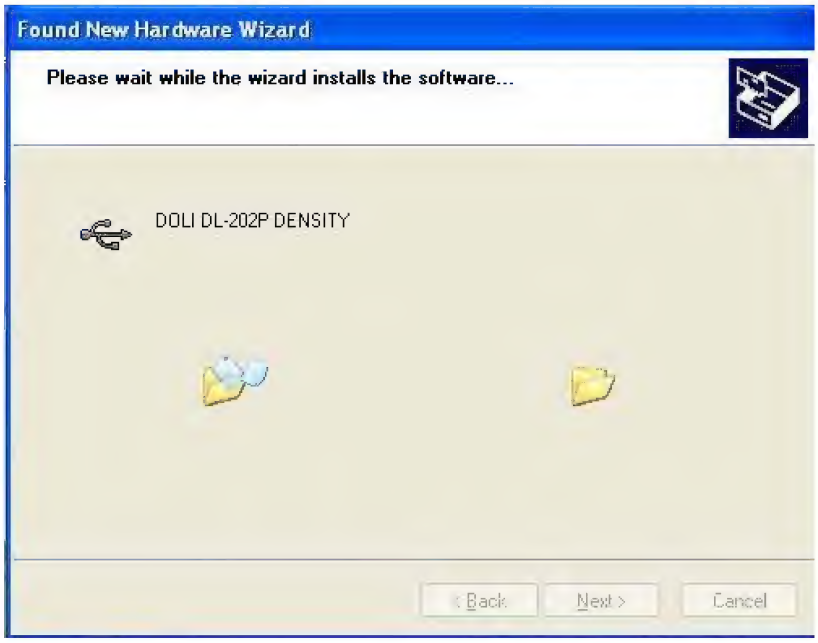
（Figure3-1）

4. Insert the CD into CD-ROM. Click **Install from a list or a specific location (Advanced)** and click **Next** (See Figure 3-2)



（Figure3-2）

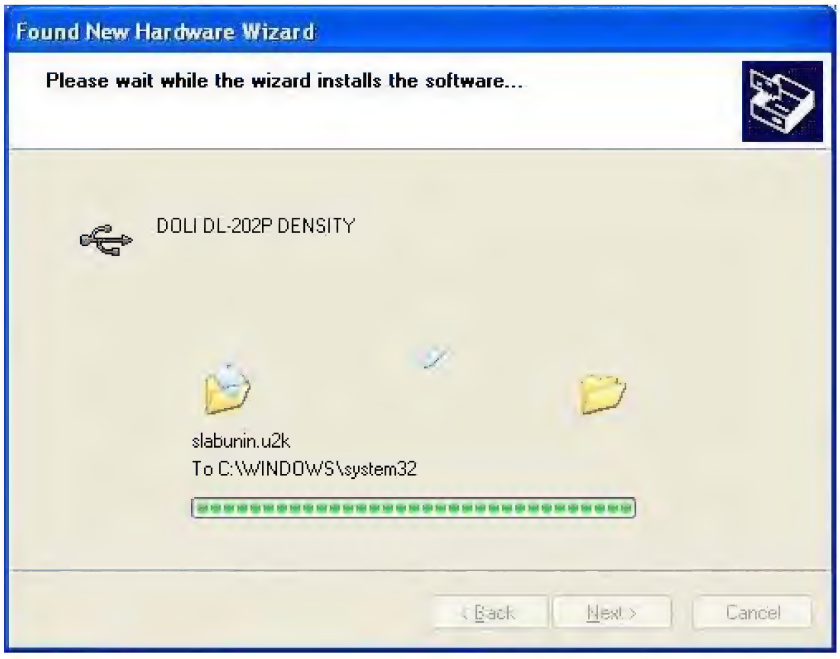
5. Put a tick before **Search removable media (floppy, CD-ROM…)** and click **Next**, the system will search installation drive; Or, put a tick before **Include this location in the search** and click **Browse** to open densitometer drive path and click **Next** to search installation drive (See Figure 3-3)



（Figure3-3）

Click **Continue Anyway** (see Figure 3-4 and Figure 3-5)

（Figure3-4）



（Figure3-5）

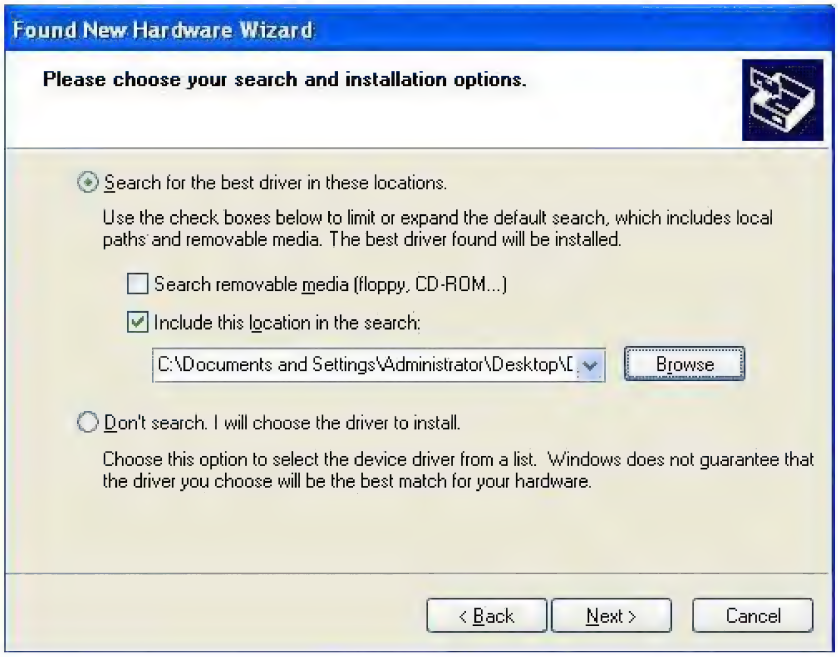
Click **Finish** to finish installation of USB drive (see Figure 3-6)

（Figure3-6）

6. System search again (see Figure 3-7)

（Figure3-7）

7. Click **Install from a list or a specific location (Advanced)** and click **Next** (see Figure 3-8)

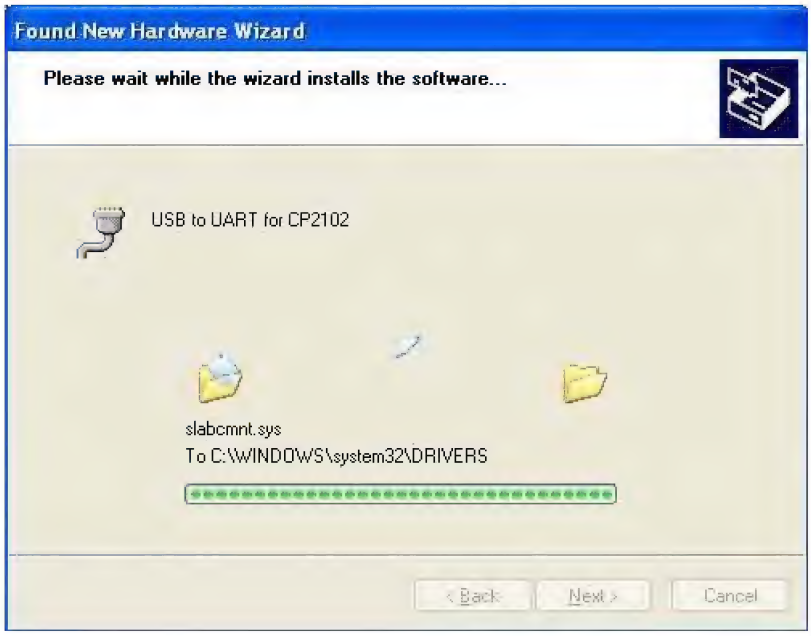


（Figure3-8）

4. Repeat step 5 until serial port drive installation finishes (see Figure3-9, Figure 3-10 and Figure 3-11)

（Figure3-9）

（Figure3-10）



（Figure3-11）

5. Click **Finish** (see Figure 3-12)

（Figure3-12）

6. After finishing the above steps, densitometer drive installation is finished (see Figure 3-13)

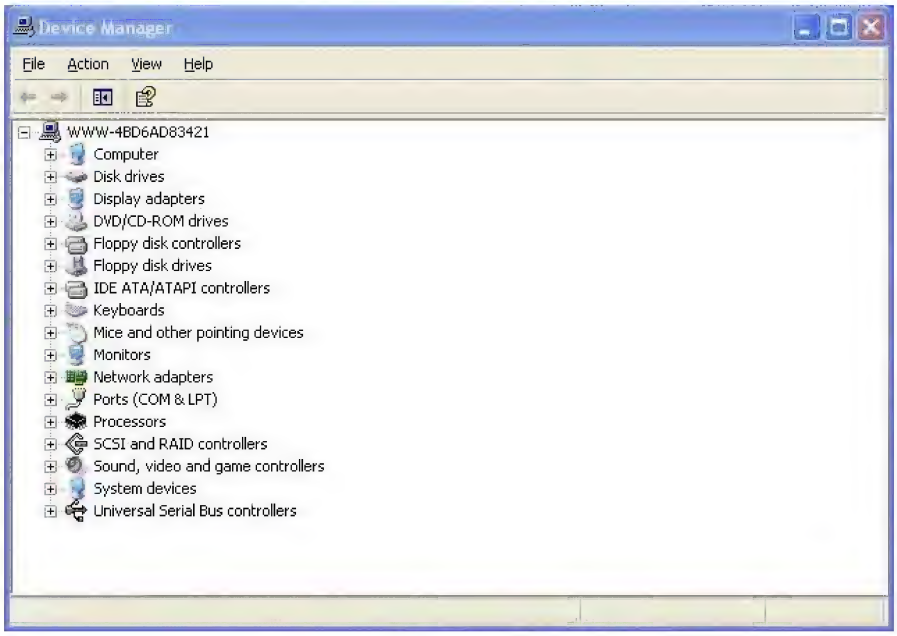
（Figure3-13）

7. Check densitometer serial port in **Device Manager**：

Right click **My Computer** and select **properties** (see Figure 3-14)

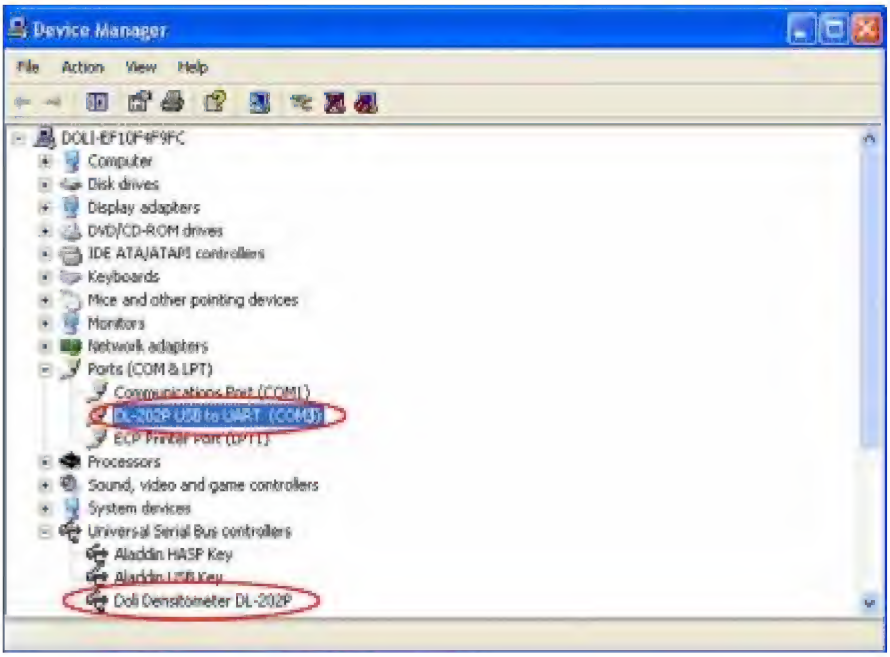
（Figure3-14）

Click **Device Manager** (see Figure 3-15)



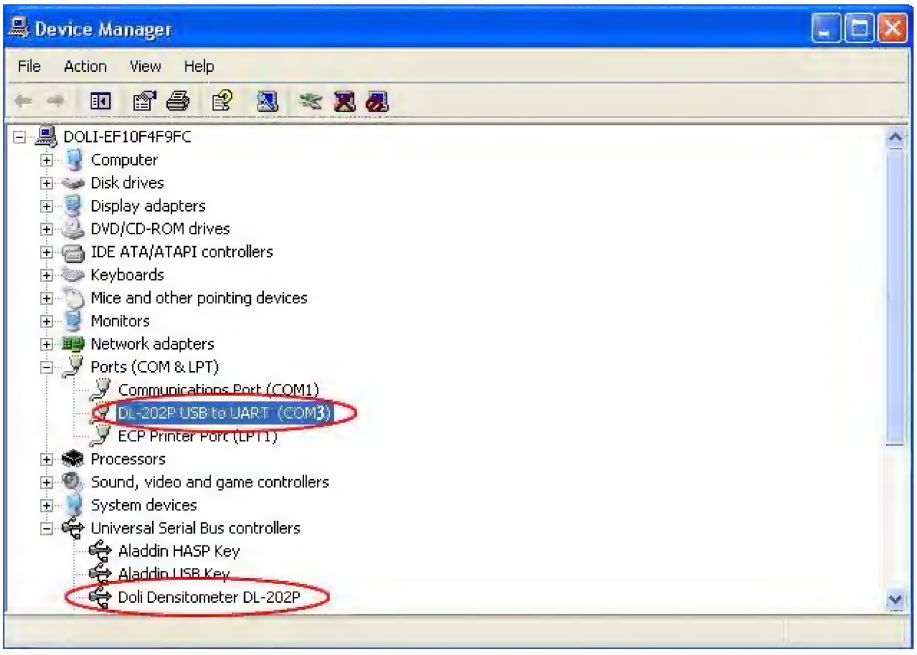
（Figure3-15）

Click + before **Ports (COM&LPT)** and **Universal Serial Bus controllers** (see Figure 3-16)

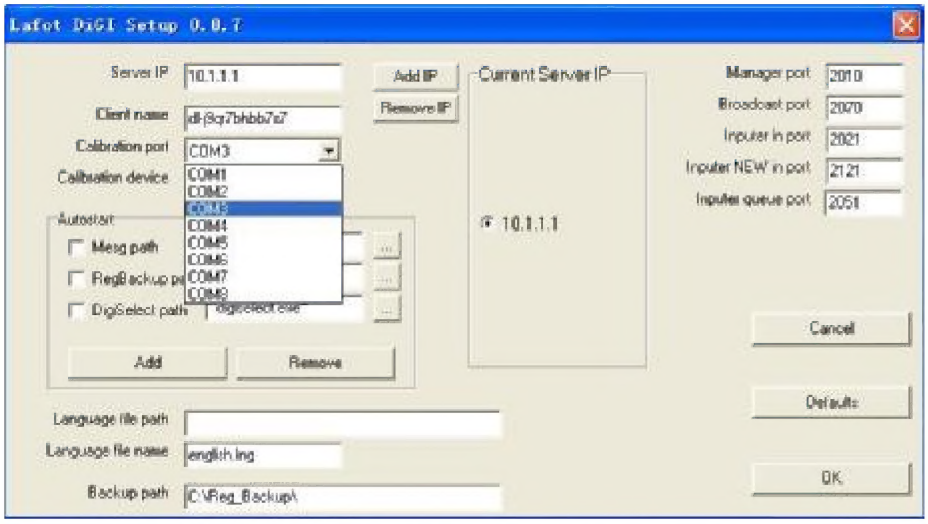


（Figure3-16）

As you can see from the above, serial port and USB drive of densitometer installation is finished. Its serial port is COM3.



4. On the Windows PC, click Start, and then Run, and then key in \\10.1.1.1\winsoftware, and then enter.
5. Run Config.

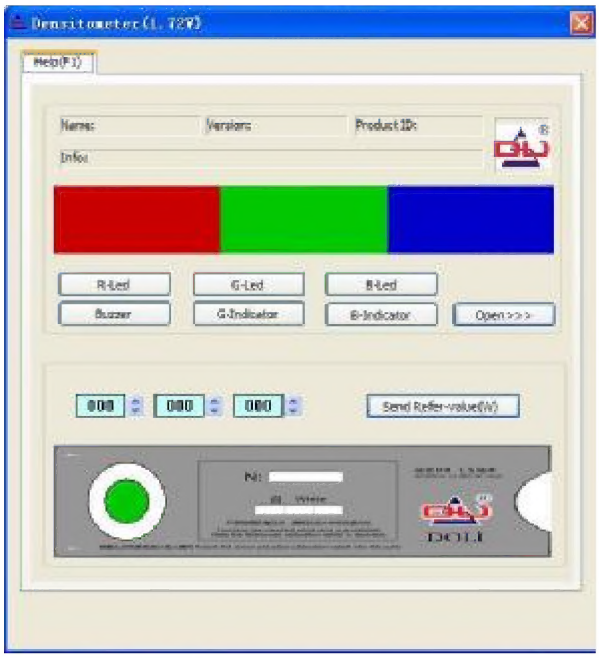


6. In Calibration port box, select the correct COM port number.

7. Click OK to close Config.

Show densitometer test value

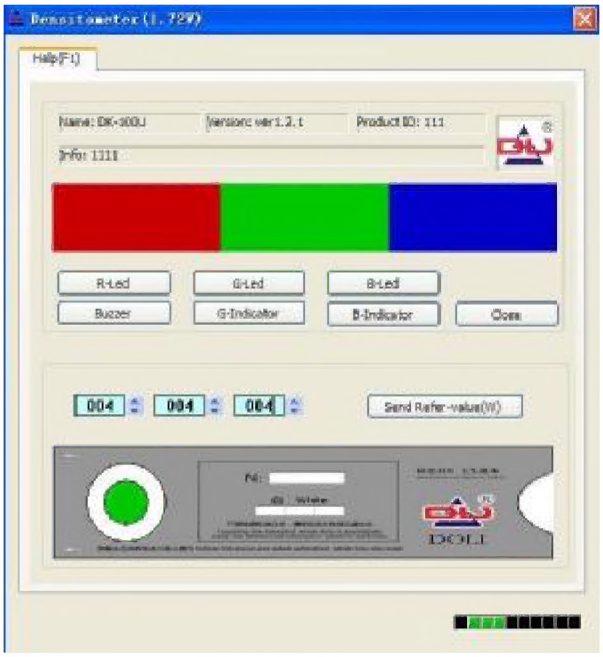
1. Open DL-202Ps User Interface (Usually in Windows PC E:\DoLi\Densimeter or Windows Desktop Start -> Programs-> Doli -> Densitometer).



（Figure3-17）

2. Click **Open>>>** on the right side to open a pull-down menu; Select the corresponding COM, you will hear beep sound and LED turns red (duration: about 0.5 S) from green

and turns green again; A scroll bar pops up (keep scrolling) and corresponding information is displayed in the primary interface; Communication between densitometer and its software is established. (see Figure 3-18)



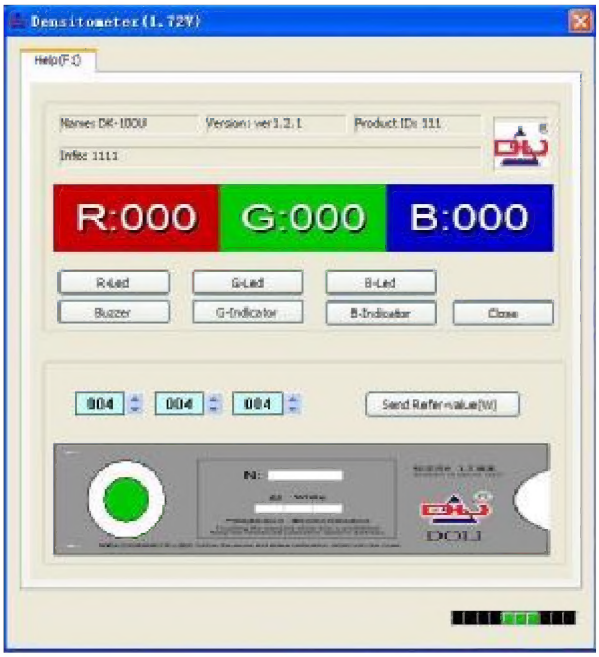
（Figure3-18）

3. **Primary interface**: After successful communication, you can see the name, version, product ID and corresponding information on the top.
4. The respective value of red, green and blue LED will be displayed in their corresponding areas.
5. The next line is for hardware testing. Click R-Led to turn on red LED, you can check from the bottom hole; the same is true of G-Led and B-LED. Click Buzzer to beep and click any button to stop. Click G-Indicator and B-Indicator to turn on top indicator.

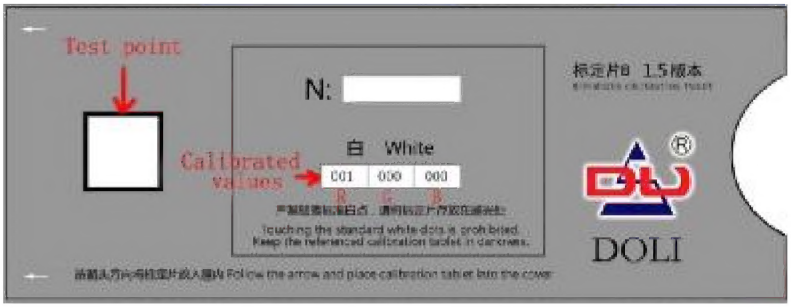
Calibration

The bottom line is for calibration. It is used with a calibration strip when densitometer has deviation

Input the three values into the boxes according to calibration strip in left-right sequence. Click **Send Refer-value (W)** to save (densitometer beeps). Put the aperture on white test point, hold on to densitometer for about 6 seconds, the indicator on densitometer will flash once, and then the values will be shown up at the RGB colour blocks.



（Figure3-19）

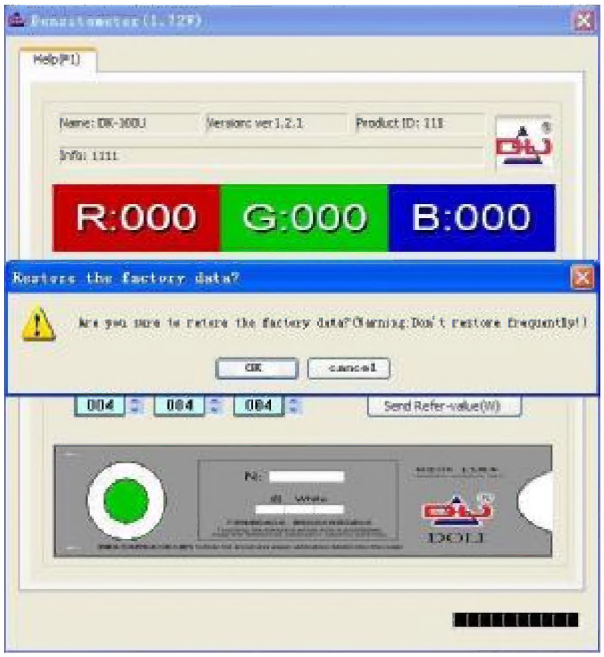


（Figure 3-20）Calibration strip

In calibration strip, the **Test point** is used for densitometer calibration; **Calibration value** is the value of R, G and B of the test point. For the sake of getting correct color of photo, please keep these areas clean! Keep calibration strip safe! Make sure no scratch!

When measuring, the hole of the densitometer base should be placed right in the middle of Test point.

Check calibration: After finishing the above step, position the densitometer on the white test point. When the densitometer beeps, check the values. If there is great deviation, it means the densitometer is not correctly calibrated. Repeat the above steps; if there is still great deviation (deviation within 001-002 is acceptable), you can restore factory data; Go to icon , hold on to **Ctrl** key and left key of mouse. A dialogue box will pop up in 5 seconds (see Figure 3-21). Click **OK**.



（Figure 3-21）

Note: When densitometer data are corrupted or the deviation is unacceptable, first restore factory data. If fault still remains, change a new densitometer. We recommend you not to restore factory data frequently.

Open help file

Left click “Help” (Hotkey: F1) to pop up help file which contains detailed operation instruction.